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*An Analytical Phonetic Study*  
*Of Three Areas*  
*Of Al-Farahidiy's Legacy*

by

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## Declaration

I declare that this thesis has been composed entirely by myself

*M.A. Sa'adeddin*





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**DEDICATION**

**TO PROFESSOR** *DAVID ABERCROMBIE,*

**A TOKEN**

**OF GRATITUDE**

**AND INDEBTEDNESS.**

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## *Prologue*

«He dwelt in one of the reed-cabins  
in Basrah without having two pence  
at his command, whilst his scholars  
were making fortunes by his teachings.»

*An Nadr b. Shumail*



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My indebtedness to Professor D. Abercrombie who rehabilitated many a forgotten phonetician and who - for decades - has been qualifying generations of phoneticians who still grow in his shadow, is beyond the possibility of definite acknowledgement for without his supervision of this work, his encouragement in all stages of its progress, his encyclopaedic knowledge, his liberal scholarly attitude, and no less his general phonetic approach which triggered me into a study of the great phoneticians of the English-speaking tradition, I could not have found my rigorous pace in Phonetics, and a priori AlFarahidiy could have remained only lip-service paid.

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## ABSTRACT

It is the purpose of the present thesis to present an analytical phonetic study of three areas of alFarahidiy's linguistic legacy in a general phonetic perspective in such a way as to preserve a proper balance between the analytical and historical sides of our subject, Phonetics. Only three areas have been decided upon due to the fact that a comprehensive, analytical study of alFarahidiy's linguistic legacy would be a lifetime-work.

The thesis is presented in four major sections: an introduction and an analytical phonetic study of three areas. The introduction deals in general terms with alFarahidiy's biography and his contributions to fields pertinent to Phonetics, though they are not primarily phonetic. The three areas deal respectively with his approach to verse structure, the time-substratum underlying his system, and his restoration of the principles which lie hid underneath what I have called (since no other term exists) the phon-  
i c o n i c symbols<sup>1</sup> of the East Mediterranean scripts. Each analytical section includes either a theoretical, phonetic discussion against which alFarahidiy's contribution is projected in terms of its relation to the general phonetic spectrum, or an empirical evidence in support of a hypothesis discovered in

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<sup>1</sup> A symbol which acts as a phonetic, reflective representation of one feature or another of the posture assumed by the articulators in the production of the represented segment.

the construction of his prosodic system. Towards this end, the first area, following a more or less Stetsonian line, includes a theoretical view of the articulatory actualization of the respiratory potential<sup>1</sup> and rhythmicity in Arabic; the second section is focused on the empirical authentication of the time-units which underlie his prosodic system, whilst the third section starts with an analytico-phonetic approach to the East Mediterranean scripts.

The thesis is concluded with a general bibliography of works that have been cited or consulted, with a special section allocated to works by or about alFarahidiy.

The author is convinced that the soundest basis for an understanding of certain phonological phenomena (particularly, the superimposed stretches, quantity and rhythm) of a living language with a long history behind it, would be an illumination of the path of development it has pursued. Such a path, in normal conditions, is provided by phoneticians or writers on phonetics. It is also the conviction of the author that for an enlightened attitude towards the history of phonetics, especially in olden times when phonetics was a practice not a discipline, an analytical, phonetic approach to the pertinent writing system constitutes a proper springboard. For this reason, equal attention has been paid to the development of the 'pure' iconic<sup>2</sup> and phoniconic writing systems in Mesopotamia and the East Mediterranean in the prelude

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<sup>1</sup> Potential is used as a noun to denote the output of the neuromuscular movement associated with the chest-pulse on which an articulatory stretch of segments, which may correspond with one or more syllables as traditionally defined, is superimposed.

<sup>2</sup> 'Pure' iconic henceforth appears as 'puriconic'.

to alFarahidiy's restoration of certain scriptological, phoniconic principles which lie in the background of the Ugaritic script in his prosodization of the Arabic script.

## A NOTE ON TRANSCRIPTION AND TRANSLITERATION

The method of transcription used throughout orientates the International Phonetic Alphabet to the limitations of an English-orientated typeface. Therefore, pharyngealization is represented by a dash across the symbol, believed to be the closest, approximate representative. The symbol for a voiced pharyngeal fricative is conventionalized as a small supralinear c, i.e. /<sup>c</sup>/, whilst the glottal stop is represented by a question mark. A voiceless pharyngeal fricative is represented by h, while a voiced uvular fricative is represented by an overturned R. A voiceless interdental fricative is worked out by a composite of a capital O with a dash across. Dentality is indicated by a dash underneath the symbol, whereas retraction is marked by a dash after the symbol. When the typeface lags behind, the IPA symbol is hand-written.

The inventory of phonematic units is as follows:

A. C-units

A.1. Nasals

- |          |                       |
|----------|-----------------------|
| m        | voiced bilabial nasal |
| <u>n</u> | voiced dental nasal   |

## A.2 Stops

b	voiced bilabial stop
<u>t</u>	voiceless dental stop
<u>d</u>	voiced dental stop
ɸ	voiceless pharyngealized dento-alveolar stop
ɖ	voiced pharyngealized dento-alveolar stop
j* {	-g
	-dʒ
	-ʒ
k	voiceless velar stop
q	voiceless uvular stop
ʔ	glottal stop

## A.3 Fricatives

f	voiceless labio-dental fricative
θ	voiceless interdental fricative
ð-	voiced interdental fricative
ð--	voiced pharyngealized interdental fricative
s	voiceless alveolar fricative
z	voiced alveolar fricative
s-	voiceless pharyngealized postero-alveolar fricative
ʃ	voiceless palato-alveolar fricative
x	voiceless uvular fricative
ɣ	voiced uvular fricative
ħ	voiceless pharyngeal fricative
c	voiced glotto-pharyngeal <sup>**</sup> fricative

\* For the dialectal differences see Ferguson, 1969, 114

\*\* Cf. Alani, 1970b, and the comments by Mitchell, T.F., Goldenberg, Y., and Abramson, A.S.

A.4 Trill

r      voiced alveolar trill

A.5 Laterals

l      voiced dental unilateral or bilateral

ɭ-      voiced pharyngealized unilateral or bilateral

A.5 Approximants

w      voiced bilabial approximant

y      voiced palatal approximant

h      voiceless glottal approximant

ɦ      h (pausal) → t (in continuum)

B.1 V-units

i      front, half-close spread

a      front, mid to half-open spread

u      back, half-close rounded

B.2 Vowel quality

Despite our belief that, in strict phonetic terms, there is much to be said in favour of the view that the Arabic vowel system comprises much more than the Arabic vowel triangle, we approach the question notationally in the very simple method



of treating all qualities as variants of the triangle, predictably governed by the other segments superimposed on the potential.

### B.3 Diphthongs

- ai      short, front-, mid- to half-open spread → front  
         half-close spread
- au      short, front-, mid- to half-open spread → back  
         half-close rounded

### C. Quantity\*

The following signs are used in the representation of length:

- :      long
- .      indicates that a long segment has been shortened to provide a space on the very same potential for a marginal segment spatially re-allocated to that potential due to the transformation of the pausal form of the word into the non-pausal one,

e.g., na:r<sup>ũ</sup>n → na.r

\* For the time-relations which hold between the segments within the potential boundaries, see Area 2.

### D. Stress

- ' or |      marks the beginning of a foot and implicitly indicates that the potential to follow is stressed
- ^      indicates any silence or pause which forms an integral part of the rhythmic structure of an utterance<sup>1</sup>

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<sup>1</sup> Cf. Abercrombie, D., (1965,22).

### E. Notational conventions

#	approximately
→	becomes
/ /	phonemic transcription
( )	phonetic transcription
TP	transitional (and/or grammatical) prosody
N	no
M	more
L	less
ST	stressed
'	generating sign
Ph	pharyngealization

### A NOTE ON transliteration

The method of transliteration used in this work is not a conventional one in the sense that it does not transliterate a letter for letter. Rather it follows more or less alFarahidiy's prosodial<sup>\*</sup> writing in which the spoken form,<sup>\*\*</sup> not the written one, constitutes the basis. The main divergence from AlFarahidiy's prosodial writing stems in two points:

- (a) the decodification of the diacritica into their constituents; and

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\* Cf. p.xxix.

\*\* For the grammatico-phonological rules governing the representation of the definite article in Standard Arabic, see Mitchell (1953), also see Nasr (1972).

- (b) the representation of the final, short supralinear and infralinear prosodies by - on the grounds of the convention that out of context the prosody carries the potentiality of being represented by any one of the three short TP's.
- (c) the representation of nunation by -- on the convention that the first - stands for (b) above, and the second - stands for n .

Capitalisation is used in the bibliography and the transliteration of proper names to mark the first constituent of the radical which forms the identifactory entry.

## PHONETIC BACKGROUND

It was felt that a necessary introduction to the areas to be analytically studied in this thesis would be an account of what can be derived from alFarahidiy's teaching relating to what we nowadays call the science and art of Phonetics. The purpose of this introduction is to present as concisely as possible the elements of alFarahidiy's approach<sup>1</sup> as reconstructed in the light of his lexicon, al<sup>C</sup>ain, and other works which contain references to his views. The picture could have been made clearer if his other works had not perished,<sup>2</sup> which is the same problem with early writers whose works have been lost. Much controversy has existed over his full authorship of al<sup>C</sup>ain, but since it has been established that most of the work is his,<sup>3</sup> it is safe to accept the phonetic and phonological observations, which we piece together here, as his, because after all, Laith, who copied the work, had no reputation as a phonetician, and because most of the material appears verbatim

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<sup>1</sup> It has to be remarked, at this point, that the terminologies of Phonemics and Prosodic Analysis are used in this work for descriptive convenience with the full realization that it is impossible to equate systems exactly and this can be no more than useful analogy. The author of this thesis strongly believes that alFarahidiy approached the description of Arabic phonology in a way which resembles Firthian Prosodic Analysis, although he did not propound a theory as such.

For Prosodic Analysis see Robins 1957b, Lyons 1962, and Hill, 1966.

<sup>2</sup> Cf. Bibliographical Notes to alFarahidiy's Works, p.316.

<sup>3</sup> Cf. Darwish, 1955.

in other works, contemporary with al<sup>C</sup>ain, e.g. alKita.b, usually attributed to Sibawaih (cf.pp.26-7) and later works attributed to alFarahidiy.

While J.R. Firth (ed. Palmer, 1968:31) rightly comments on the Arabic script in these terms:

"... the Arabic script in all its forms and especially when it is fully pointed, offers what in my terminology, I would describe as a prosodic analysis of the word and piece",

it is in the phonological approach of alFarahidiy, who brought the Arabic script to that form of analysis, that we can feel this assumption to be justified. It is in alFarahidiy that Arabic is treated as made up of two systems:

- (A) a system of phonematic units /huru.f/, /majru:sah/ vs /ju.f/, phonetically; /siha.h/ vs /mu<sup>C</sup>tallah/, functionally; and /sa:kin/ vs /mutaharrik/, structurally; and
- (B) a system of prosodies /ʔadawa.t-lʔi<sup>C</sup>ra.b/ [speech-elements] which operate on a number of dimensions, one of which is what, since no other term exists, I term 'the prosodico-phonematic dimension' (see below).

Although there is no other term in alFarahidiy's legacy that may be equated with the Firthian "phonematic unit" except the /harf/, the treatment of the linear segments separately from the supralinear and infralinear prosodies justifies borrowing the term from Firth. As far as the term, prosody, is concerned, it is quite feasible to equate it with /ʔadawa:t-ʃakl/<sup>1</sup> [elements of

<sup>1</sup> For /ʃakl/ and /ʔi<sup>C</sup>ra.b/ see p.232, re. Ibn-Muja:hid.

diacritization] in script, and /ʔadawa:t-ʔi<sup>C</sup>ra.b/ [elements of expression,<sup>1</sup> lit.] in speech.

#### A.1 THE PHONEMATIC UNITS OF ARABIC

Besides the attributes given to litera in the Western tradition, i.e. nomen, the letter as identified for discussion, figura, the letter as written, and potestas, the letter as pronounced, which appear in al<sup>C</sup>ain as /ʔalharf/,<sup>2</sup> /su:ra:t-lharf/, and /harf-- maktu.b/ [the picture of the /harf/ and a written /harf/], and /harf/-al, respectively, alFarahidiy defines the /harf/ in these terms:

"The /harf/ (pl. /huru.f/) is one of /huru:f-lhija.ʔ/<sup>3</sup> (letters of spelling). Every word which is neither a noun or a verb, i.e. particle, is a /harf/, as well. Every word that is read (i.e. Qurʔanic reading) following a certain dialect is a /harf/. In consequence, it is said that a person follows the /harf/ of Ibn- Masʕu.d; i.e. follows his dialect."

(Ms.238)

Although the above attributes of the /harf/ in addition to his functional dichotomy of the /huru.f/ into /sahi.h/ (stable)

<sup>1</sup> The only elements of expression which alFarahidiy allows for within the word boundaries are the /haraka.t/ (lit. movements), i.e. /fathah/ (lit. the open), /dammah/ (lit. the embrace or the rounded), and /kasrah/ (the break) (Tubingen Ms.3), and /suku.n/ (0-short vowel), cf. p.245). According to alFarahidiy, "all lax segments [the Arabic vowel triangle] originate in the /haraka.t/ [prosody of synthesis or transitional prosody]." (Ms.770).

<sup>2</sup> In Arabic, 'al' is only permissible with nouns and adjectives identifying nouns.

<sup>3</sup> This is not to be confused with /huru:f- lmu<sup>C</sup>jam/ (letters of the alphabet), cf. p.231.

and /mu<sup>C</sup>tall/ (unstable), have been preserved, it is lamentable that his binary approach to the /huru.f/ (segments) as phonetic phenomena, and ± /ħarakah/ (what I have interpreted as a transitional prosody or a prosody of synthesis), has been forgotten.

#### A.1.1 THE BINARY DICHOTOMY OF THE HURU.F:

AlFarahidiy treats the /huru.f/ of Arabic as subject to three methods of classification:

- (A) /majru.sah/ vs /ju.f/,
- (B) /siħa.ħ/ vs /mu<sup>C</sup>tallaħ/, and
- (C) /sa:kin/ vs /mutaħharrik/.

#### (A) /majru.sah/ vs /ju.f/ (i.e. Consonant vs Vowel)

AlFarahidiy treats the segments of Arabic phonetically as divided into /majru.sah/ vs /ju.f/. In his definition of /jars/, this dichotomy becomes clear before our eyes. The /jars/ is defined as follows:

"/jars/ is the articulatory characteristics of the /majru.s/-segments (i.e. consonants). It is also used to denote the sound /sauħ/, itself, and its (auditory) realization. The three /jauf/-segments possess no /jars/, as such. All other segments are majru:sah/ - that is segments other than /a./, /u/, /i./. The /ju.f/-segments (contextually speaking) require the /majru:sah/ segments to support them; whilst the /majru:sah/-segments require no such support; their /jars/ (i.e. articulatory characteristics) suffice them."

(Ms.537)

(B) /siha.h/ vs /mu<sup>C</sup>talla.h/ (i.e. Stable vs Unstable)

Functionally AlFarahidiy treats the segments of Arabic as divided into /siha.h/ (sing. /sahi.h/) and /mu<sup>C</sup>talla.h/. This may be brought home to us by quotations from Al<sup>C</sup>ain.

Laith introduces how alFarahidiy re-organized the segments of Arabic for the purposes of morphophonological lexicography as follows:

"He (alFarahidiy) considered all the segments of (Arabic), but he found it impossible to start (his lexicon) from the beginning-/a./, /b/, /t/, /θ/, etc., i.e. with the /?alif/, because /a./ is /harf-- mu<sup>C</sup>tall/ [an unstable segment]. Having excluded the first segment, he disliked starting with the second segment, the /ba.?, without further scrutiny and investigation. Therefore, he re-considered all the segments and tested them articulatorily (tasted them), and came to the conclusion that the most appropriate segment to start with was the deepest in the pharynx, i.e. the /<sup>C</sup>ain/. His method of (tasting) how the segments were articulated was to open his mouth producing an /a:/ followed by the segment, concerned, thus:  
/a:b/, /a:t/, /a:θ/, /a:h/, /a:<sup>C</sup>/, /a:ʁ/, etc."

(Ms.2)

In his discussion of the tri-phonematic<sup>1</sup> speech paradigms, he states:

"The /sahi.h/ (stable), tri-phonematic paradigm is conditioned by the fact that it should contain three segments, none of which is either /wa.w/, or /ya.?, or /?alif/ because those segments are /mu<sup>C</sup>tallah/. Examples of the /sahi.h/ tri-phonematic are:  
/d<sup>a</sup>r<sup>a</sup>b/, /x<sup>a</sup>r<sup>a</sup>j/ and /d<sup>a</sup>x<sup>a</sup>l/; whereas /s<sup>a</sup>ra:/,

<sup>1</sup> This term is adopted as a more accurate translation of the Arabic original than the traditional translation 'triliteral'.



/d<sup>a</sup>ra:/ and /d<sup>a</sup>r<sup>a</sup>w<sup>a</sup>/, /x<sup>a</sup>l<sup>a</sup>y<sup>a</sup>/, /x<sup>a</sup>l<sup>a</sup>a:/, and /x<sup>a</sup>lu:/ are examples of the /m<sup>u</sup><sup>c</sup>tall/ (unstable) paradigm because they contain /ʔalif/, /wa.w/ or /ya.ʔ/."

(Ms.7)

Again in his study of the Arabic segments, we meet with the following:

"In Arabic, there are twenty-nine segments; twenty-five of which are /siha.h/ (stable), i.e. not subject to variation except in assimilation. They have fixed /ʔahya.z/ (lit. zones) and /mada:riʃ/ (subzones)."

(Ms.6)

"The glottal stop is termed /mu<sup>c</sup>tallah/ due to the fact that it is subject to /talyi.n/ (laxification, change into /layyin/ - lax - segments), substitution or deletion."<sup>1</sup>

(Ms.815)

"The /huru.f- lmu<sup>c</sup>tallah/ are /a./, /u./ and /i./."

(Ms.840)

(C) /sa:kin/ vs /mutaharrik/ (C- sonant vs C+ sonant)<sup>2</sup>

Structurally speaking, alFarahidiy builds up his prosodic hierarchy on the division of the /huru.f/ into /sa:kin/ and /mutaharrik/, i.e. C± a transitional prosody. In his observation about the written /ʔalif/ before a syllabic C in phonetic terminology, he says:

<sup>1</sup> For the treatment of the glottal stop, see p.15-16.

<sup>2</sup> Cf. Mitchell, 1953.

"The written form /ʔalif/ at the beginning of verbs like /ʃhankaka/ (أَشْكَكُ), /qʃa<sup>c</sup>arra/ (أَقْشَرُ), /ʃhanfara/ (أَشْفَرُ) and (ʃbakarra/ (أَشْبَكُ) is not structural. It has been introduced at the beginning of such verbs and other speech-forms in order to provide a support and a ladder for the tongue to actualize the segment, because the /sa:kin- mina lhuru.f/ [a C-transitional prosody in a syllabic position] cannot be actualized without /ʔalif- wasl/.<sup>1</sup> However, verbs like /dahraja/, /hamlaja/ and /qartasa/ need no such /ʔalif/'s because (Manuscript obscure) ...

Bear in mind that the /ra.ʔ/ in /qʃa<sup>c</sup>arra/ (أَقْشَرُ) and ʃbakarra/ (أَشْبَكُ) - [reference is here made to the Arabic script because /r/ is represented on the linear dimension as one /r/] is two geminated /r/'s. The /taʃdi.d/ (the supralinear diacritic for gemination) /ʷ/ is the marker of gemination."

(Ms.2)

## A.2 THE SYSTEM OF ARABIC PROSODIES

So far we have explained how alFarahidiy treated the segments of Arabic on the linear dimension as a system of phonematic units, /majru.sah/ vs /ju.f/, phonetically, /siha.h/ vs /mu<sup>c</sup>tallah/, functionally, and /sa:kin/ vs /mutaharrik/,<sup>2</sup> structurally. It remains to comment on how he treated his system of diacritics as made up of prosodies which contribute to the approximation of the word and

<sup>1</sup> On-glide in this context. It also represents what Firth terms interword juncture-marker.

<sup>2</sup> For /sa:kin/ and /mutaharrik/ see Area 1.

sentence to their spoken forms. To this end, we may divide our discussion of the prosodies of Arabic into discussions of word-prosodies and sentence-prosodies.

(A) WORD-PROSODIES

In his comments on the paradigm for the word, /yad/, alFarahidiy says:

"Ibn-ZarCah/ claims that /yad/ is, in its basic structure, nuninized<sup>1</sup>(i.e. it is /yadun/), and mentions that nunation is /?i<sup>C</sup>ra.b/. The case is not so. The only elements of /?i<sup>C</sup>ra.b/ within the paradigm are the /haraka.t/ (lit. movements, techn. cf. p.244, my interpretation, transitional in Sweet's terms, or a prosody of synthesis), i.e. /fathah/, /dammah/ and /kasrah/ at certain positions within the word. Nunation is not a (word) transitional. It is classified in the same category as /n/."

(Ms.3)

Three points in the above quotation are worth noting:

- (i) Nunation is not a transitional prosody, as far as the word paradigm is concerned;
- (ii) The only transitional prosodies within the paradigm are the /haraka.t/;
- (iii) The /haraka.t/ are not in every case transitionals. Their transitional function is restricted to certain places; i.e. where /?iska.n/<sup>2</sup>(zero-harakah) is inapplicable; and

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<sup>1</sup> Nunation is a contextual marker of the noun in Arabic. It is suffixed to the end of a noun as a marker of an indefinite noun in opposition with the definite article /?al/. It is represented as a diacritic thus:  $\bar{n}$ .

<sup>2</sup> Cf. pp.245-246.

- (iv) Nunation, i.e. when the /harakat/ is absent, is classified with the phonematic unit, /n/.

The above points bring us to the following conclusion:

In contrast with the /haraka.t/, all other diacritics in their capacity as /?i<sup>c</sup>ra.b/ (means that provide the transformation of the written form into a spoken one) operate on units smaller and larger than the word. They contribute to the linear and supralinear synthesis. To put it another way, they perform functions which range from supplying the written form with the necessary segments - i.e. those which are missing in the script, devoid of diacritics - to marking syllable-division, interword juncture and utterance finality. And it is due to that multiple function of certain diacritics that, since no other term exists, I term them "prosodico-phonematic" elements. For instance, /taʃdi.d/, /<sup>w</sup>/ does not only operate on the phonematic dimension by marking that a certain segment should be doubled; it also provides a piece of information about the syllable division on the prosodic dimension.

An example will illustrate the above point. A word like /hadda.m/ would appear in the script in transliterated form as /hda.m/ (هَدَام). When it is diacritized, it would appear thus: /hda.m/ (هَدَام). Now, if we write it in alFarahidiy's prosodial<sup>1</sup> writing it becomes /h<sup>a</sup>d da.m/.

The example above puts the case quite clearly. The marker of gemination, /taʃdi.d/ has contributed to two levels of

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<sup>1</sup> Cf. xxix.

analysis: the phonematic dimension by rendering the /d/ into two /d/'s on the linear level, and similarly has indicated the end of one syllable and the beginning of another one on the prosodic level. It has marked the geminated consonant and at the same time marked the syllable division.

Again, if we take the above example in its non-pausal form, it would appear in the script in its diacritically unmarked form in no way different from the pausal form. With its diacritics it would appear thus: /h<sup>ad</sup>d<sup>d</sup>am<sup>u</sup>/ (هَدَامُ); and if it is rendered into alFarahidiy's prosodial<sup>1</sup> writing it appears thus /h<sup>a</sup>d da: m<sup>u</sup>n/, which implies a complete change in the syllable division, not to mention the change on the phonematic dimension.

This description of the /karaka.t/ as transitional elements in certain positions within the word boundaries brings us to what prosodies operate over the syllable.

## (B) SYLLABLE PROSODIES

The prosodies of /tafXi.m/ (velarization) and /tarqi.q/ (palatalization) have been dealt with by ElSa'aran (1951) under the supervision of Professor Firth. It remains for us here to introduce how alFarahidiy dealt with the feature of nasalization.

In alFarahidiy's lexicon (Ms.187), we read the following observation regarding nasalization in the dialect of Hims, a town

<sup>1</sup> "Prosodial" is used to signify what relates to a study of verse in the traditional sense in contrast with "prosodic" as used in Firthian terminology.

on the Orontes in Central Syria:

"In the dialect of Hims, people utter the word, /ħā<sup>~</sup>ō<sup>~</sup>ō<sup>~</sup>/ with an /n/. In the plural, however, they omit it; so they say /ħuōu.ō/. This sort of /n/ in their dialect is non-segmental /ɣunnah/ (nasality).<sup>1</sup> It emerges in their speech when they utter (a monosyllabic) word ending with a geminate; i.e. words like /ruzz/ which they utter thus: /rūzz/, or when they utter a (disyllabic) word like /ʔājjār/. Nevertheless, in the plural they omit the nasality and say /ʔuǰa.ǰi.r/."

#### (C) INTERWORD JUNCTURE

The marker which denotes the interword juncture in Firthian terminology is referred to in alFarahidiy's system as /ʔalwasṭ/ (conjunction).

All other diacritics<sup>2</sup> operate on a multidimensional level which includes the syllable, the word and the utterance.

#### B. THE ORGANS OF SPEECH, RECONSTRUCTED

It has been pointed out by Mitchell in his discussion of AlAni's paper on the acoustical and physiological investigation of the Arabic /<sup>C</sup>/, that

"... the old Arab grammarians were no mean phoneticians and orthoepists. Was it not AlKhalil who devised the written shape of Hamza from the upper part of /<sup>C</sup>/. and was it not interesting to reflect on the justification given him by Dr AlAni's experiments today?"

<sup>1</sup> See below.

<sup>2</sup> For the diacritics and conventions see Area 3.

To this statement one may add that alFarahidiy did not lag behind in the anatomical knowledge required for the study of speech.

It is necessary at this point to present alFarahidiy's view of the vocal tract, as I have reconstructed it and re-arranged it in the light of the Tübingen Manuscript of Al<sup>C</sup>ain and Ibn-Ya<sup>C</sup>ish's (n.d.) where alFarahidiy is quoted from what seems to be an extinct copy of Al<sup>C</sup>ain in the tenth century. However, it has to be emphasized that my rearrangement is not far from the terms as they appear in alFarahidiy's description of the Arabic segments.

AlFarahidiy starts his description of the Arabic segments with the introduction of the terms /jauf/ and /halq/ (MS.p.6). Those terms have been taken to mean (chest) and (throat), respectively. However, a review of the lexicon, i.e. Al<sup>C</sup>ain, where a number of terms are related to the throat, justifies a re-introduction of terms pertinent to the laryngeal and pharyngeal area, as viewed by alFarahidiy.

The following terms appear in the Tübingen manuscript:

- (1) /ʔalkulqu.m/ (Ms.196): /maXraj- nnafas- min- lkulqu.m/.  
(It is the place through which the breath is expelled.)  
/ʔalkulq.m huwa lkunjarah/ (the kulqu.m is the larynx). [ʔalkulqu.m/ = the larynx.]
- (2) /ʔalbul<sup>C</sup>u.m/ (Ms.134): also /ʔazzurdu.m/ (Ms.655) is defined as /mawdi<sup>C</sup>- llibtila.<sup>C</sup>- min- lhalq/ (It is the place of swallowing. [ʔalbul<sup>C</sup>u.m/ = the oesophagus.]

- (3) /ʔalḥunjur/ (Ms.268): /ʔalḥunjur- jawf- lḥulqu.m/  
 (It is the hollow space in the larynx). [/ʔalḥunjur/  
 = the glottis.]
- (4) /ʔalḥalq/ (Ms.196): /masa.ʔ-ṭṭa<sup>C</sup>a.m- waʃʃara.b wa maXraj-  
 nnafas- min- lḥulqu.m/ (It is the combined passage of  
 food and drinks and the passage for the breath out of  
 the larynx). [/ʔalḥalq/ = the pharynx.]

In his definition of /ḍunnah/, alFarahidiy stands abreast with any modern phonetician. He defines /ḍunnah/, i.e. nasality, as follows:

"It is a melodious sound produced by forcing the breath out of the nose through the / Xaya.ʃi.m/ (the posterior apertures of the nasal cavity) with the aid of the chest-breath. /n/ is the strongest nasal."

(Ms.389)

The above definition of /ḍunnah/ brings us to the terms, related to the nose. In the lexicon, we find the following:

- (1) /ʔalXaiʃu.m/ (Ms.360,455): /muʔaXXir- fathalt- lʔanf/, sing.  
 /Xaiʃu.m/, pl. /Xaya.ʃi.m/. (The posterior apertures of the nose). [/ʔalXaya.ʃi.m/ = the outward apertures of the nose.]
- (2) /ʔalminXar/ (Ms.360) /niXrata. lʔanf- Xirqa.h wa lqiya.s-  
 minXar/ (The two nostrils of the nose are its front holes. It is /minXar/ on analogy of the paradigm /mif<sup>C</sup>al/.).  
 [/minXar/ = nostril.]



For the purposes of description, in alFarahidiy's lexicon the roof of the mouth is treated as divided into the following:

- (1) /ʔallaha.ħ/ (Ms.313): /ʔallahat-ʔaḡsa. lʔamm wa hiya laħmat--mu rifat-- ala. lħalq/ (It is the back part of the mouth. It is also the fleshy piece (the pendulous end of the soft palate) which overlooks the pharynx). [/ʔallaha.ħ = the velum and the uvula, or what I have termed as the velo-uvular place of articulation.]
- (2) /ħa:r- lʔamm/ (Ms.413): /ħa:r- lʔam- niṭa:<sup>C</sup>uh- bain-lħanakain wa ħa:r- maħa:rah wa minhum man yaqu:l- ħa:r- lʔa<sup>C</sup>la: wa ħa:r- lʔasfal/ (The mouth cavity is the space it occupies between the two sides of the upper jaw. It is a cavity or cave. Some of them [probably a previous generation of phoneticians or desert authorities] divide it into the upper cavity and the lower cavity. [/ħa:r- lʔamm/ = palate and alveolar ridge.]
- (3) /ʃajar- lʔamm/ (Ms.6): /ʃajar- lʔamm muḡrajuħ/ (It is the place where the roof of the mouth gets wider). [/ʃajar- lʔamm/ = palatal and palato-alveolar subzone.]
- (4) /niṭ<sup>C</sup>- lʔamm/ (Ms.101): /ʔanniṭ<sup>C</sup>- ma: ʔaħar- min- ħa:r- lʔa<sup>C</sup>la: wa hiya lǧildaħ- lmulṭasiqaħ- bi <sup>C</sup>aom- lXulaiqa.? wa fi:ha ʔa:ħa:r-- ka ttahzi.z/ (It is the part of the roof of the mouth which is available to the eye. It is the skin which covers the frontal, bony arch of the mouth. It has incision-like traces on it). [/niṭ<sup>C</sup>- lʔamm/ = the alveolar ridge.]

- (5) /ʔallaθθalt/ (Ms.4.6): /ba:tin- θθana:ya: wa manbituha./  
(The interior of the upper incisors and where they grow).  
[/ʔallaθθalt/ = the gum over the incisors.]
- (6) /ʔaθθana:ya -l<sup>C</sup>ulya:/ (Ms.4, Ibn- Ya<sup>C</sup>i.sh) (The upper  
incisors). [/ʔaθθana:ya l<sup>C</sup>ulya:/ = The upper incisors.]

Again, for the purposes of description, the tongue<sup>1</sup> is  
divided in alFarahidiy's description of segments into the following:

- (1) /jaðr- llisa.n/ (Ms.559): /ʔaɭjaðr- ʔasl- llisa.n/  
(The root is where the tongue originates).  
[/jaðr- llisa.n/ = the root of the tongue.]
- (2) /<sup>C</sup>akadaɭt- llisa.n/: (Ms.45): /ʔaɭ<sup>C</sup>akadaɭt- <sup>C</sup>uqdaɭt- llisa.n  
kayθu yasmun/ (It is the knot of the tongue, where it  
grows fatter). This is further explained by the  
description of /q/ and /k/ as produced between  
/<sup>C</sup>akadaɭt-llisa.n/ (the back of the tongue) and the  
/laha.ɭt/ (uvula and the velum). (Ms.4).  
[/<sup>C</sup>akadaɭt-llisa.n/ = the back of the tongue.]
- (3) /ðahr- llisa.n/ (Ms.398): /ʔaððahr- ma rtafa<sup>C</sup>a min-ʃʃai?/  
(/ʔaððahr/ is the high, middle of the relevant part).  
This is further explicated by the description of /ʃ/ as  
produced between the /ða:r- lʔa<sup>C</sup>la:/ (see above) and  
/ðahr- llisa.n/ (the middle of the tongue; i.e. the front).  
(Ms.4). [/ðahr- llisa.n/ = the front of the tongue.]
- (4) /ʔasalaɭt- llisa.n/: (Ms.691): /ʔasal- llisa.n-  
mustadaqquh/ (It is the place where the tongue grows  
narrower). [/ʔasalaɭt- llisa.n/: the blade of the tongue.]

<sup>1</sup>'The articulator of speech', (MS.669).

- (5) /ḡalaq- llisa.n/ (Ms.455) /ʔaḡḡalaq- hadd- kul-ḡaiʔ/  
 (It is the point of the relevant part). This is further explained by the classification of /r/, /l/ and /n/ as /ḡali.qalt/ because /ʔaḡḡala:qalt- fi lmantiq hiya bi ʔaraf- ʔasalaḡt llisa.n/ (The fluency of articulation lies in the tip of the blade of the tongue). [/ḡalaq- llisa.n/ = the tip of the tongue.]
- (6) /ha:falt- llisa.n/ (Ms.263, Ibn-Ya<sup>C</sup>i.sh, 10,125)  
 (The side of the tongue). [/ha:falt- llisa.n/ = the side of the tongue.]

The function of the lips as organs of speech was also realized by alFarahidiy as might be substantiated by the following quotations from alFarahidiy in the Tübingen manuscript:

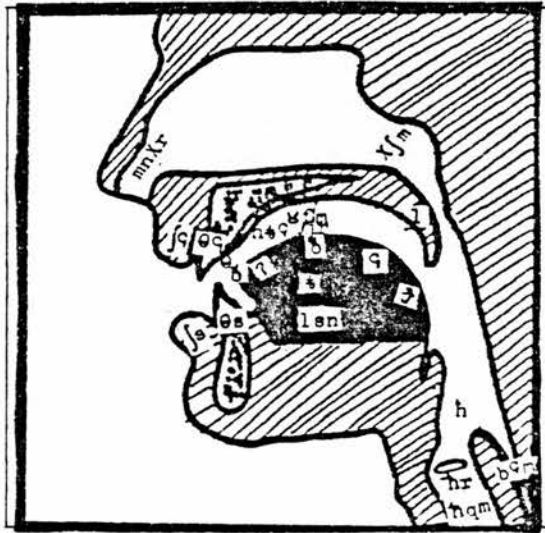
"/f/, /b/ and /m/ are emitted from between the lips. The lips play no part whatsoever in any of the stable segments except in those three."  
 (Ms.3)

"/b/ is classified with /f/ because both are labial; and likewise is the case of /m/. They are all emitted from the labial zone."  
 (Ms.831)

And, similarly, the description of /f/ as a labio-dental segment has not escaped the observation of alFarahidiy. Thus, he states, as quoted by Ibn-Ya<sup>C</sup>i.sh (d.1003):

"/f/ is produced between the interior of the lower lip and the edges of the upper incisors."

(n.d. 10:125)



Illus. 1. Organs of Speech, reconstructed  
after al-Farahidiy's description

- \*hqm : /hulqu.m/, the larynx
- \*hr : /hunjur/, the glottis
- \*bqm : /bulqu.m/, the oesophagus
- \*h : /halq/, the pharynx
- \*xjm : /xaiju.m/, the posterior apertures of the nasal cavity
- \*mnxr : /minxar/, nostril, pl. /ʔanf/, the nose
- \*l : /lahat/, the uvula and the soft palate
- \*bfm : /ba.r-lfamm/, the oral cavity
- \*jfr : /ʔajarlfamm/, the palatal and palato-alveolar zone
- \*nθs : /natīs-lfamm/, the alveolar ridge
- \*θ : /laθθah/, the alveoli-dental zone
- \*θs : /ʔaθθana.ya-lʔulya./, the upper incisors
- \*f : /ʔaʔʔafaht-lʔulya./, the upper lip
- \*s : /ʔaʔʔafaht-ssufla./, the lower lip
- \*θs : /ʔaθθana.ya-ssufla./, the lower incisors
- \*lisa.n : /lisa.n/, tongue
- \*j : /jaðr-lisa.n/, the root of the tongue
- \*q : /ʔakadaht-lisa.n/, the back of the tongue
- \*ð : /ðahr.lisa.n/, the middle of the tongue (the front)
- \*ʔ : /ʔasalaht-lisa.n/, the blade of the tongue
- \*ð : /ðalaq-lisa.n/, the tip of the tongue
- \*t : /taraf-lisa.n/, the side of the tongue

## C. ALFARAHIDIY'S DESCRIPTION OF THE ARABIC SEGMENTS

As an articulatory event, frozen in time, the simplest method for describing a segment is by place and manner of articulation. To this end, alFarahidiy invents a descriptive hierarchy for the places of articulation and describes the manner of articulation by binary classification.

### C.1 DESCRIPTION BY PLACE OF ARTICULATION

In the first place, the segments are classified into three major categories:

- (A) /huru.f- ʕāla:qalt/ (the segments of fluency):  
 "This group includes /r/, /l/, /n/, /f/, /b/ and /m/. They have been termed /ʕulq/ or /ʕali:qah/ because the /ʕāla:qah/ (fluency of articulation) lies in the (area between the) tip of the blade of the tongue and the lips." (Ms.3).
- (B) /ʔalhuru:f- ssuʔm/ (the non glotto-pharyngeal segments)  
 "The /suʔm/-segments are the ones not produced in the throat." (Ms.635).
- (C) /huru.f- lhalq/: (the pharyngeal segments). In terms of general categorization, the glottal stop and the voiceless glottal approximant are grouped with the pharyngeal segments. However, by definition they are excluded.  
 "/<sup>C</sup>/, /h/, and /ħ/, are segments in the pharynx. However, the glottal stop is in the very depth of the pharynx. It is firmly constricted, but if it is

de-constricted, it provides the basis for /ya.ʔ/, /wa.w/ and /alif/, which is not the case of the stable segments." (Ms.4)

"/h/ is the most fragile of the stable segments. It is mere breath."<sup>1</sup> (Ms.274)

In the second place, the general categories above are divided by description into:

1. (a) Glottal: /jauf/  
By definition, this sub-group includes the glottal stop and the voiceless glottal approximant which is defined in terms of breath and de-constricted glottal stop.
- (b) Pharyngeal: /ħalqiyyah/
2. (a) Velo-uvular: /lahawiyyah/
- (b) Buccal: /famm/
3. (a) Apical: /ʕalaq/
- (b) Labial: /ʃafawiyyah/.

Finally, in the third place, the segments are described in the following terms:

"/a./, /i./ and /u./ and the glottal stop are /jauf/-segments because they are emitted from the /jauf/ (cf. /ħulqu.m/). They do not fall in the /ħalq/ [pharyngeal], lingual [/ʕalaq/, in this context], /lah.aħ/ (or what I have termed as the velo-uvular) subzones. They are in the air-stream. /a./, /i./, and /u./ are /ħawa:ʔiyyah/ [/ħawa:ʔiy/ sing. adj., noun /ħawa.ʔ/ = airstream).] They are articulations in the airstream.

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<sup>1</sup> Also see p.31.

"The innermost segments in the pharynx are /<sup>c</sup>/, /h/ and /ħ/. Had it not been for the hoarseness of the /ħa.ʔ/, it could have resembled the /<sup>c</sup>ain/; and had it not been for the breathiness of the /ħa.ʔ/, it could have resembled the /ħa.ʔ/ due to the closeness of their places of articulation. Those segments are classified in one zone, though there are differences amongst them in height along the pharynx.

/ʁ/ and /X/ are emitted at the very top of the pharynx. However, /X/ is closer to the mouth than /ʁ/.

/q/ and /k/ are emitted from one subzone. The /ka.f/ is rather frontish in the direction of the mouth. They are /lahawiyyata.n/ [dual, sing. /lahawiy/] because they start on the /laha.ħt/.

/ʒ/ and /ʃ/ are in one subzone, i.e. between the middle of the tongue and the middle of the upper jaw. They are /ʃajariyyah/ - the /ʃajar/ is where the roof of the mouth gets wider - because they start on the /ʃajar/ of the mouth.

/d/ falls in the same category with /ʒ/, /ʃ/ and /y/. However, it is closer to the side of the tongue and the opposite molars. However, it might be produced from the left side or the right side of the mouth.

/l/, /r/ and /n/ are produced in one subzone, though there are differences in their places (in frontness). /l/ is produced between the end of the side of the tongue to the tip of the tongue, on the one hand, and what faces it of the roof of the mouth, which extends along the pre-molar, the canine tooth, the lateral incisor and an incisor, on the other. /n/ is produced between the tip of the blade of the tongue and the area just above the incisors. From the same place, but rather further back in the direction of /l/, /r/<sup>1</sup> is produced. All are termed /ʕalaqiyyah/.

<sup>1</sup> /r/ is described in the Tübingen Manuscript as "a segment for the production of which the tip of the tongue is set in free motion". (Ms.3). In the Kita.b, it appears as /mukarrar/ (repeated). (p.454).

"/t̤/, /d/ and /t/ are in one subzone; that is between the tip of the blade of the tongue and the roots of the incisors. They are /niṭ<sup>C</sup>iyyah/ because their place begins on /niṭ<sup>C</sup> -lfamm/ where incision-like traces appear.

/s/, /s/ and /z/ are in one group. They are emitted between the blade of the tongue and the roots of the incisors. They are termed /ʔasaliyyah/ because they start on the /ʔasalah/ [blade] of the tongue, i.e. where it grows narrower.

/θ̤/, /θ̤/, and /θ/ are in one group. They are emitted between the blade<sup>1</sup> of the tongue and the roots of the incisors with differences (in frontness) in their specific places. They are termed /laθawiyyah/ because they start on the /laθah/ [i.e. the edge of the gum].

/f/, /b/ and /m/ are in one group; the lip, /ʃafah/ that is. They are termed /ʃafahiyyah/ and /ʃafawiyyah/ [labial].

/f/ is (produced) from between the interior of the lower lip and the edges of the upper incisors.

/b/ and /m/ are (produced) between the two lips. /m/, however, is forced back through the /Xaya.ʃi.m/ [the posterior apertures of the nose] which gives it the /ḏunnah/ character [nasal character]; and that is why it sounds like /n/."

(Ms. The Introduction. Ibn- Ya<sup>C</sup>i.sh, 10:125)

## C.2 MANNER OR ARTICULATION

So far we have examined how alFarahidiy described the segments of Arabic in terms of places of articulation. It remains

<sup>1</sup> One might expect this to be 'the tip'. However, this is the way it appears in the two references concerned.



to present how he described them in terms of manner of articulation. As a phonetician, he solves the problem by the introduction of the terms, /mahmu.s/ vs /majhu.r/, and /ʃadi.d/ vs /riXw/, which were devised together with the other binary features by alFarahidiy, according to alMakhzu.miy (1960:120). Within this context, the segments of Arabic are either /mahmu:sah/ or /majhu:rah/; and similarly they are either /ʃadi.dah/, /riXwah/, /bain- ʃʃadi.dalt wa rriXwah/, (between /ʃadi.dah/ and /riXwah/), or with very wide passages.

- (A) /mahmu.sah/ vs /majhu.rah/:<sup>1</sup> (lit. whispered vs sonorant)  
AlFarahidiy defines /ʔalhams/ as follows:

"/ʔalhams- hiss- ssaut- fi-lfam-mimma la: ʔi/ra:b- lahu min saut- ssadr wa la: jaha:raht - lahu: fi lmantiq wa laisa fi.hi maʃrab- ʔunnaht wa la: nakwih." (Ms.291).

Here follows a translation of the definition, above:

"/ʔalhams/ is what the sound feels like, in the mouth, with no influence of the chest-voice or sonority in emission, and with no influence of nasality or the like."

And in the light of the definition above, one might safely conclude that the definition of /majhu.rah/ may be:

"/ʔaljahr/ is what the sound feels like, in the mouth, with the influence of the chest-voice and sonority in emission, and with the influence of nasality and the like."

The above definitions may be confirmed by the classification of the Arabic segments according to their /hams/ and /jahr/ features, as they appear in the Kita.b:

<sup>1</sup> "hams", n., "mahmu.s", masc.adj., "mahmus:sah", fem.adj.,  
"jahr", n., "majhu.r", masc.adj., "majhu:rah", fem.adj.

"The /mahmu.sah/ are the segments you find in (the memoriae technicae) /s<sup>a</sup>t<sup>a</sup>f h<sup>a</sup>θk x<sup>a</sup> f<sup>a</sup>h/, while the other segments are /majhu.rah/."

(B) /ʃadi.dah/ vs /riXwah/:

AlFarahidiy in the Kita.b, explains the difference between the features /ʃiddah/ and /raXa:wah/ in these terms:

"/ʃadi.dah/ are those you find in (the memoriae technicae) /ʃ<sup>a</sup>dk<sup>a</sup> q<sup>a</sup>bt<sup>a</sup>-. /ʃarriXwah/ are all other segments except those you find in /l<sup>a</sup>m y<sup>u</sup>r<sup>a</sup>w<sup>i</sup> n a:/ [memoriae technicae], which are classified between /riXwah/ and /ʃadi.dah/. The /ʃiddah/ [indicates] that the segment is firmly constricted at its place of articulation with no flowing whatsoever. The /raXa:wah/ is the opposite. You can realize the difference by articulating the /ʃi.m/ in /ʃalhaj/ and the /ʃi.n/ in /ʃattaf/ as pausal forms. You notice that /ʃ/ is firmly constricted, with no possibility of lengthening it [unless the closure is released, that is]; which is not the case of /ʃi.n/. The /ʃi.n/ can be lengthened. The state of being between /ʃiddah/ and /raXa:wah/ is that in which the segment is neither firmly constricted, nor easily flowing; which is the case of the /<sup>C</sup>ain/, for instance.

(AlKita.b, p.454)  
(also, Ibn-Ya<sup>C</sup>i.sh, 10:128)

And if we put together the above elucidation with the observation of alFarahidiy that

"u./, /i./ and /a./ are the segments with the widest passages" (alKita.b, 1881:311), and that "the /ha.ʔ/ is the most fragile of the /sihah/- segments because it is mere breath" (Ms.274),

we may safely conclude that the terms /riXwah/ and /ʃadi.dah/ are terms used to indicate the degree of stricture in a way that might be equated with degrees of approximation. Accordingly, it is probably feasible to translate the terms as follows:

/ʃadi.d/ = [complete closure]  
 /riXw / = [open approximation]  
 /bain-ʃʃadi.d- war riXw/ = [close approximation]  
 /ʔawsa<sup>\*C</sup>- lmaXa:rij/ = [most open approximants]

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\* Comparative degree of /wa:si<sup>C</sup>/ = wide. Within its context, /ʔawsa - lhuru.f- maXa.rij--/, it is (the segments with the widest passages). (Cf. p.30.)

THE 'PHONEMATIC UNITS' OF ARABIC  
( STABLE PHONEMATIC UNITS )

hs : /hams/ (cf. p.x1)

ZONES														
STRICTURE	GLOTTAL AND PHARYNGEAL			NON-GLOTTAL AND NON-PHARYNGEAL							UNITS OF FLUENCY (APICAL + LABIAL)			MANNER OF ARTICULATION
COMPLETE CLOSURE	GLOTTAL	PHARYNGEAL	POSTERO- UVULAR	BUCCAL (SUBZONES)			ALVEOLAR				DENTAL	LABIO DENTAL	BILABIAL	
				PALATAL			ALVEOLI- DENTAL							
				VELO-UVULAR	VELAR	PALATAL	PALATO ALVEOLAR	ALVEOLAR	ALVEOLI- DENTAL					
				UVULAR										
														NASAL
				q	(hs) k	j		(hs) t d					b	STOP
CLOSE APPROXIMATION														LATERAL CENTRAL TRILL
OPEN APPROXIMATION		(hs) h	(hs) x									(hs) f		CENTRAL APPROXIMANTS
MOST OPEN APPROXIMATION	(hs) h													
				BACK			FRONT (MIDDLE)			BLADE			TIP	

( U N S T A B L E   P H O N E M A T I C   U N I T S )

COMPLETE CLOSURE	?		u.	i. a.				
MOST OPEN APPROXIMATION	h						t	
			u. w					
				y i. a.				

AIR-STREAM  
ARTICULATIONS

D I A C R I T I C A   +   ' P R O S O D I E S '

T R A N S I T I O N A L

	u			THE ROUNDED	AIR-STREAM ARTICULATIONS
			i	THE BREAK (CLOSE)	
			a	THE OPEN	

SUKUNATION

LENGTH MARKER

GEMINATION

NASALIZATION  
PALATALIZATION  
VELARIZATION

NUNATION

INTERWORD JUNCTURE

Cf.  
AREA 3

## INTRODUCTION

AlKhalil bin Ahmad alFarahidiy (Ibn-Hazm, 1962,ii,380) was born in <sup>C</sup>uman in southeast Arabia in 718 A.D. He was brought up in alBasrah (Balsora, in Medieval Europe) - a town in southern Iraq, on Sha~~tt~~-l<sup>C</sup>arab (the name of the tidal estuary, which is formed by the united stream of the Euphrates and the Tigris) - where he died in 776 A.D. (Ibn-nNadim, 1964,42), 786 A.D. (alMarzubaniy, 1964,56), 791 A.D. (azZuabaidiy, 1954,47). Not much is known about his early life, but alMarzubaniy (op.cit.,69) relates that he, at the age of ten, could dumbfound the famous Arab satirist and panegyrist, alFarazdaq (d.ca.730 A.D.); and Abu~~t~~Fayyib (1955,31) relates that in his youth he used to go on pilgrimage in one year, and go fighting for his principles - in the next year - in the wastes of Najd, Tihamah and alHijaz, whence he collected his field linguistic material. While young he adhered to his tribal, moderate branch of Kharijites<sup>1</sup> (alMarzubaniy, op.cit.,56); however, under the influence of his first tutor, he was converted to the Sunnites.<sup>2</sup> All sources agree that he led a pious, sagacious and modest life on the yield of a garden bequeathed unto him by his father (alMarzubaniy, op.cit.,56,58,67) and occasionally on falconry (alBazyar, 1953,19). Later on he lived on a pension settled on him

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<sup>1</sup> Cf. Religion, p.6.

<sup>2</sup> Cf. Religion, p.6.

by the governor of Fars and alAhwaz (Ibn-Khallikan, MDCCCLII, i,493-494).

#### A. GENERAL BACKGROUND

AlFarahidiy's field of interest was very wide as can be vouched for from an examination of the titles of his works which not only include the three components of the trivium,<sup>1</sup> but also couple with them the fourth component of the quadrivium,<sup>1</sup> i.e. music. For the greater part of his life he was a teacher of linguistic sciences in his linguistic circle which qualified leading linguists - nahwiyyin,<sup>2</sup> phoneticians, writers on lexicography and poetics, and writers on prosody. Nevertheless, he could spare some of his time "to comment on dialectical theology and controversy, as well as the techniques of chess and backgammon" (alMakhzumiy, 1960,48).

His most influential works were al<sup>C</sup>ain (a lexicon of Arabic), anNaqt washShakl (punctuation and diacritization), ashShawahid (poetic quotations in support of nahw-rules), anNagham (modes), al-Iqa<sup>C</sup> (rhythm), al<sup>C</sup>aru.d (the Science of Verse Structure), and a lost treatise on punctuation and diacritization of the Qur'an. Two pages which I have investigated at the Bodleian Library in Oxford (Bd.i,230, No.1047, dated 1256, Ms.Pococke,383-384) explain in semantic, flexional and phonetic terms why the paradigm, f-<sup>C</sup>-l, was chosen as an archetypal

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<sup>1</sup> Trivium was used in the Middle Ages to denote the division of the seven liberal arts, which comprises grammar, rhetoric and logic. Quadrivium was used to denote the division comprising the mathematical sciences (arithmetic, geometry, astronomy and music).

<sup>2</sup> Grammarians, roughly speaking. For a traditional definition of /nahw/ see pp.11,21.

one. Perhaps those two pages are related to a longer fragment of 24 folios of sarf-lKhalil (alKhalil's Accidence) kept at the Library of Berlin (vi,315, No.6909, dated 1418). A work never mentioned by his biographers, entitled alHuruf or Risalah fi Ma<sup>C</sup>ani-lHuruf (A Treatise on the Meanings of Letters) was published by A.T. Ramadan. But having examined the work at Oxford University I am of the opinion that it has nothing to do with alFarahidiy on the score of its inconsistency with his approach and terminology. In fact, the variety of his works epitomize the main stream of the Arabic linguistic thinking until our present day, and simultaneously reflect on the secular approach to linguistic studies he initiated conformably with the aspects of his life which we discuss in further detail below.

#### A.1 EDUCATION

As usually was the case in the early days of Islam, alFarahidiy's scholarly life began from Qur'an-exegeses, knowledge of tradition and jurisprudence. It is not quite certain whether he tackled those subjects in his writings, though he uses quite a few quotations from the Qur'an in support of his views, as can be seen in a review of the Kitab. It is established, however, that he contributed to the punctuation and diacritization of the Qur'an both in the embryo-diacritization<sup>1</sup> period and through his prosodic diacritization method (adDani, 1930,125).

<sup>1</sup> This term is used to denote the stage of diacritization prior to alFarahidiy's system of diacritics. Cf. p.220-226.



His biographers mention the following authorities among his tutors:

A.1.1 Abu Ayyub asSikhityaniy

It seems that the first congenial person in alFarahidiy's scholarly life was his first tutor, asSikhtiyaniy (d.ca.748), who was a traditionalist, jurisprudent and dialectical theologian (azZirikliy, 1954, i,82, ii,363). This congenial influence can be traced in the student's ideas about theology in particular and life in general. It was under the influence of this tutor that he abandoned his Kharijite in favour of the Sunnite. Whatever the case, it should be borne in mind that the sectarian differences of that time were primarily political and not theological. In this connexion, one tends to believe that conversion in this respect could be considered as the neutralization of the Kharijite violent element from alFarahidiy's make-up. In that sense, we may conclude that the first tutor moulded the student's character on the bases of piety, modesty and research.

A.1.2 ʿAbdullah-bnu Isḥaq-lḤadramiy (d.ca.735)

AlḤadramiy was a naḥwīy and a Qurʾān reader from Basrah. However, his surname presupposes that he was not originally Basran. It suggests a southern Arabian origin. It seems now established that he was the first of the Arabic naḥwīyin to have extended the application of alQiyas, i.e. analogical reasoning, to naḥw (cf. Mustafa, PICO, xxi, 278-9).

A.1.3 <sup>C</sup>isa-bn-<sup>C</sup>umar (d.ca.766)

<sup>C</sup>isa was a naḥwīy and a Qurʾān-reader. He is said to have been the first to write works on naḥw, but unfortunately the two books he wrote - alKamil and alJami<sup>C</sup> - have not survived. Following alHadramiy, he applied analogical reasoning to naḥw. Concerning his books, Ibn-nNadim (1964,42) and asSirafiy (1938,31) state that they heard about them, but never saw them. According to those two authorities, alFarahidiy, in praise of those books, wrote the following lines:

All the naḥw has become invalid  
except what has been written by <sup>C</sup>isa-bn-<sup>C</sup>umar;  
That Kamil and this Jami<sup>C</sup>  
are the sun and the moon for all (scholars).

A.1.4 Abu <sup>C</sup>amr bn-l<sup>C</sup>ala? (d.ca.770)

Abu <sup>C</sup>amr is one of the founders of Arabic linguistic studies and one of the seven canonical readers of the Qurʾān. His primary field of work was concentrated on the compilation of pre-Islamic poetry. However, since he belongs to the generation of scholars for whom the study of Arabic was affiliated to Qurʾānic exegesis, it is quite arbitrary to detach in him the poetry-transmitter and naḥwīy from the Qurʾān reader. His far reaching influence, though it is very difficult to determine, was of the first importance on the linguistic studies in alBasrah. Concerning his position, alJaki<sup>o</sup> (1948, i,225) states that, "he

was the most learned man in things pertinent to the Arabs, and combining with the accuracy of his transmission the veracity of his statements". In actual fact, it is no exaggeration to say that this scholar dominated the intellectual activities of alBasrah in the transitory period, prior to the time when alFarahidiy's generation took over and separated the Arabic linguistic studies from reading studies. Whatever the case, it seems that the relation between Abu <sup>C</sup>amr and alFarahidiy was not a teacher-student relationship; it rather took the form of scholarly connection between alFarahidiy who visited Abu <sup>C</sup>amr's circle with the intention to debate with him, but decided not to do so on the conviction that

"He has been the head of alBasrah's circle for fifty years. For fear my debate with him would deprive him of that prestige, I decided not to utter a word."

(Ibn-l<sup>C</sup>imad, quo. alFarahidiy, ca.1940, i,276)

## A.2 RELIGION

Perhaps it is out of the scope of this thesis to discuss and interpret certain religious points of view. Nevertheless, it seems prerequisite to consider the three dogmatic sects which, since the dawn of Islam, played an essential role in the formation of Arabic thought and philosophical dogmas - a factor which in the last interpretation marked a clear distinction

between the Basran School and the Kufan School. And, within that context, it is relevant to the topic of this thesis on account of the fact that alFarahidiy is claimed to have been affiliated with those three sects; and the fact that his secular circle, which put out of currency all other circles, was a by-product of the maturity of dogmatic conflicts.

One of the stages which had far-reaching consequences on the course of Arabic history came from the election of the 4th Orthodox Caliph, <sup>C</sup>aliy-bn-Abi Talib in 656 A.D., and the attitude taken by the governor of Damascus who considered the election invalid. In effect, this conflict marked the formation of sects, as represented by the Kharijites (i.e. the non-conformists), whom "today, would perhaps have been called radical democrats" (Fernau, 1955,57). Their importance lies particularly - from the viewpoint of the development of dogma - in the introduction of questions pertinent to the democratic theory of the Caliphate and the justification by faith or by practice. In the meantime, another sect was formed; that is the Shi<sup>C</sup>ites (i.e. the partisans of <sup>C</sup>aliy). In principle, the Shi<sup>C</sup>ite in its moderate form is a modification of the Sunnite (the Prophet's tradition), rather than an alternative. The particular character of this sect offered much incentive to dogmatic speculation, the categories of philosophy and dialectics. The third sect, the Mu<sup>C</sup>tazilites (the seclusionists), is said to have been the creator

of speculative dogmatics in Islam. The dominant notes of their philosophy are based on the view of religion in its purely intellectual aspects. Their primary contribution to that period was the creation of Islamic scholasticism. In fact, it is to their influence that the world owes keeping intact the early Greek works; it was under the 7th Abbasid Caliph, alMa'mun (786-833) - a Mu'tazilite - that the Baghdad Scientific Institution, Bait-lHikmah, was established. It is at that institution that the translation of philosophical and scientific Greek works - officially brought from Byzantium - as well as corrections of and commentaries on certain Greek works, were made.

In this milieu of thought, alFarahidiy lived and practised his scholarship. On the whole, his biographers associate him with the Kharijites (alMarzubaniy, op.cit.,56) in his youth, but with the Sunnites (Abu#Fayyib, op.cit.,29; alAnbariy, 1294 H.,58-59; al'asqalaniy, 1325 H., iii,164) and the Shi'ites (alQiftiy, 1950, i,343-4) at a later time. However, in the opinion of his scholars he dissociated himself from all political movements in favour of the very essence of Islam. This liberal attitude found its expression in the secular characteristic of his linguistic circle and the impetus he gave to research and scholarship to the extent that he was described as the innovator of sciences that had been unknown in their very principles to the most learned amongst the Arabs. (Ibn-Khallikan, op.cit., iii,494).

For the Golden Age of Arabic culture, alBasrah was not only a very great city which occupied a very important strategic position on the crossroads to India, Persia and the Far East, but a complete cultural Metropolis, where the horizontal line of Greek culture was remarried to the Arabic culture which represented a synthesis of the ancient southern Arabic culture and the cultures that had flourished in the East and around the Mediterranean basin since the dawn of history. Or, in the words of L. Massignon, "Basrah, in fact, is the veritable crucible in which Islamic culture assumed its form, crystalized in the classical mould, between the 1st and 4th centuries of the Hijrah, (637-923)", (1954).

In such a cultural Metropolis, alFarahidiy established his linguistic school which did not confine itself to the East, but had its impact on linguistic studies, as from the 10th century, in Spain (Chejne, 1974,186) where the Basran works were not only carefully studied and memorized, but thoroughly glossed and annotated as well. At this school he qualified the linguists who were destined to dominate the Arabic linguistic studies after his death. In this regard it has to be emphasized that the relationship between the Basrah School tutor and his students, particularly Sibawaih, can be likened to the relationship between F. de Saussure, on the one hand, and Ch. Bally and A. Sechehaye, on the other.

It is no mean claim to his eminence in linguistics to agree with alBustaniy (1875, vii,461) that the Basrah School tutor had good mastery of, or had a sort of access to Greek - still disputed, though - and with alBairuniy (1958,105) that, in his prosody, he was acquainted with the works of the Sanskrit authorities on verse structure. In actual fact, to be able to understand the Greek tradition, and to have understood the works of the Sanskrit phoneticians and prosodists, is a scholarly dream not every scholar can achieve. It takes a genius like alFarahidiy to assimilate those traditions and to invent his own. Whatever the case, his liberal attitude and critical mentality could never have overlooked the school of Jund-Shapur and the monasteries not far from alBasrah where the Greek tradition was the major curriculum.

By the second half of the 8th century, the pure linguistic circle of alBasrah had dominated every aspect of the Arabic linguistic studies under alFarahidiy. This school is credited with the following contributions:

- (i) the systematization of ancient Arabic phonology on a multidimensional and polysystemic approach;
- (ii) the systematization of Arabic verse structure on a viewpoint resembling Prosodic Analysis, and on rhythmic bases derived from ordinary speech;
- (iii) the prosodization of the Arabic script;
- (iv) the compilation of the first Arabic lexicon on morphophonological bases; and
- (v) the systematization of Arabic nahw on behavioural, and functional bases.

As far as the contributions of the Basran School are concerned, it has to be remarked that the Basran approach to *nahw* was in the first place characterized by the accentuation of analogical<sup>1</sup> reasoning, i.e. *qiyas* (lit. measurement by an established criterion), which was so strictly followed that alKisa'iy (d.ca.805) stated in verse that:

"AnNahw is but analogical reasoning to be followed, because it has been (proven) useful in all fields of knowledge."

(asSuyutiy, 1326 H.,272)

Ibn-l'anbariy (1117-1181) echoes this tradition in a more elaborate way. He states that:

"The rejection of analogical reasoning in anNahw is impossible because, on the whole anNahw is analogical reasoning. It is on that account that it has been defined as the knowledge of the analogical criteria systematized on the basis of the scrutiny of the speech of the Arabs. He who rejects analogical reasoning rejects anNahw."

(asSuyutiy, 1892,38)

In actual fact, it seems that the emphasis on analogical systematization marks the major characteristic which distinguished the Basran school as rigorously established by alFarahidiy from the Kufan school which allowed for idiosyncracies as long as they had been transmitted to them by unimpeachable authorities. In

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<sup>1</sup> For the use of analogy in the Greek tradition see Robins, 1967.



this respect, it is very interesting to remark that by a comprehensive review of alKitab one finds that by and large every explanation quoted from alFarahidiy is based on analogical reasoning.

#### A.4 ALFARAHIDIY'S CHARACTER

For several reasons, alFarahidiy's character is perhaps of considerable interest. Its appeal is not only for those who came under the direct influence of his personality, but it reaches beyond the generations that were stimulated by his teachings. To every scholar, it is one of interest because it was a restless voyage of discovery, where the traveller, with only the compass of thirst for research and knowledge, sets out to discover regions of unlimited boundaries in linguistic sciences; and with a unique liberality of thought, opinion and sympathies founds the pillars of Arabic linguistic studies.

However strenuous the efforts to obliterate the revolutionary aspects of his character, a researcher still finds glimpses of light to cast over the two handicaps which he had to fight: the authority and lack of means. Nevertheless, his handicaps never screened his magnitude, which probably was the only reason why he was spared intimidation at the hands of the anti-Kharijite authorities. In praise of his scholarly magnitude, atTuwajiy remarked:

"Once, we, men of letters, representing the four corners of the state, met in Mecca, and evaluated the men of knowledge. The representatives of each town praised and appreciated their own, until alKhalil was mentioned. Then, all representatives unanimously agreed that he was the most brilliant amongst the Arabs, the master of, and the key holder to all sciences."

(AbuṭṬayyib, 1955,39)

But, although he was described by Sufyan-ṭauriy (715-778) as a man "made of gold and musk" (Ibn-lʿanbariy, 1959, 30), alFarahidiy wore his scholarship modestly. Yet, when on one occasion his subsistence was put at stake in opposition with his scholarly pride, he not only challenged the governor of Fars and alAhwaz who had settled his pension on him, but he also taught him an unforgettable lesson (Ibn-Khallikan, op.cit.,493; Yaqt, 1927, iv,182).

Perhaps the years of scholarship were the happiest and most peaceful he had known. In those years he worked as a tutor and a pedagogue, who believed that,

"the most learned are the representatives of God on earth."

(Ibn-lʿanbariy, op.cit.,29)

His pedagogic ethics may well be enlightened by his instructions, as related by his students:

"He, who feels satisfied with the knowledge he has acquired, becomes ignorant. But, if he couples the knowledge of others with his own, he could be counted amongst the divine."

"He, whose shyness hinders his acquisition of knowledge, wears the cloak of ignorance and the mask of insolence."

(azZubaidiy, op.cit.,44)

"Be bent on consulting your brains rather than on memorizing your notes."

(alMubarrad, 1864,171)

"Learn as much as you can in order to know, and as little in order to memorize."

(alJahid, 1947,256)

The faculty for logical judgement was never wanting in his scholarly attitude. That he hypothesizes, analyzes, synthesizes and generalizes is perfectly true. This, in fact, can be well authenticated by quotations from his most brilliant student, Sibawaih, who has preserved most of his legacy to posterity:

"AlKhalil asked: 'How would you say it if you intend to articulate the /k/ in /laka/ and /malik/, and the /b/ in /darab/'. 'We say

/ba.ʔ/ and /ka.f/, they replied. He commented: 'You have not articulated the segment, but the nomen'. Then he added 'If I were you, I would say (k<sup>ah</sup>) and (b<sup>ah</sup>)'. We asked: 'Why did you annex (h)?' He answered: 'I have noticed that they (the bedouins) say /<sup>c</sup>/ with an annexed (h) to actualize the segment, because the segment in isolation, cannot be actualized without it. However, in continuum, you say (k<sup>a</sup>) and (b<sup>a</sup>). That is it, lads.'"

(1881, ii,56)

"This is the chapter on glottality. Bear in mind that the glottal stop (contextually speaking) is subject to three cases: actualization, light actualization and substitution. Actualization is exemplified by /qaraʔtu/, /raʔsun/, /luʔmun/, /biʔsa/, etc. In light actualization, the glottal stop, becomes in-between. This is to be explained below. It is to be remembered that a glottal stop followed and preceded by fathah, may be willingly rendered into something between /ʔ/ and /a:/. In that case, it is actualized, yet you have weakened the sound (plosion), concealed it, and have not completed it, because you have approximated it to /a:/ .... If the glottal stop is followed by kasrah and preceded by fathah, it becomes something between /ʔ/ and /i:/ ... And if the glottal stop is followed by dammah and preceded by fathah, it becomes

something between /ʔ/ and /u:/ ... Every glottal stop in contact with the glide that follows it is approximated to that glide. They have been rendered in-between, and not /a:/ or /i:/ or /u:/ because they are originally glottal stops, and for fear that that entity might be lost. They have made them as such to indicate that glottality is their origin .... This is the view of the Arabs (bedouins) and alKhalil, as well."

(Sibawaih, op.cit.,168-9)

Besides that faculty of logical judgement, he was characterized by a sense of humour and presence of mind. Ibn-Khallikan (op.cit.,496) relates how he impromptu extemporized a few lines in reproach of his son, who, on finding his father applying his rhythmic rules to a piece of verse loudly, had run out and told passers-by that his father had lost his wits. He addressed his son in these terms:

"Had you known what I was saying,  
           you would have excused me;  
 And had you known what you said,  
           I should have blamed you.  
 But you did not understand me,  
           so, you blamed me;  
 And I knew that you were a fool,  
           so, I pardoned you."

(Ibn-Khallikan, op.cit.,496; asSirafiy, 1955,31;  
                                   asSuyyutiy, 1964, i,558)

Another incident which exemplifies his presence of mind is pertinent to the renowned nahwiyy, alAsma<sup>C</sup>iy (d.ca.828), who attempted to learn the rules, concerning verse structure, but nothing could be impressed on his mind; so the master told him to work on the line:

"If you encounter something beyond your reach,  
Pass over to something within your reach."

(Ibn-Khallikan, ibid.)

The student perceived the drift and went away.

His lack of means was so unbelievably noticeable that his student, anNaḍr-bn-Shumail said:

"He dwelt in one of the reed-cabins of Basrah  
without having two pence at his command,  
whilst his scholars were making fortunes by  
his teachings."

(ashShuraishiy, 1300 H., iv,61)

Probably, this state of poverty was the motive behind his grieved statement:

"I lock the door upon myself so that my grief  
wanders not abroad."

(Ibn-Khallikan, op.cit.,496)

## B. LINGUISTIC BACKGROUND

Now that we have covered more general aspects of alFarahidiy's life, it is necessary, before coming to the specific areas, to provide some background to certain features of his linguistic approach.

### B.1 ALFARAHIDIY, THE NAHWIY

The relationship between alFarahidiy and his student, Sibawaih, as well as the pronouncements of other nahwiyin in the Kitab, have yet to be reviewed comprehensively and analytically. Moreover, a comparative and contrastive study of the passages associated with alFarahidiy in the Kitab and his work alJumal-fi-nNahw (Ms. Ayasofya 4456,2, dated 1204) has yet to be written. Partial studies exist, e.g. Reuschel, W. (1959); Troupeau, G. (Arabica, viii, 1961); Beeston, A.F.L. (BSOAS, 25, 1962); and Fischer, W. (ZDMG, 1963,113). Those investigations have shown beyond any shadow of doubt the fundamental part played by alFarahidiy in the systematization of Arabic nahw. Baalbaki (Ph.D. thesis, SOAS, 1978) comments on the relationship between the two men, as follows:

"It would be unrealistic to claim that it is possible to examine the linguistic analysis of either Khalil or Sibawahi in isolation. The role of Khalil is integral to the whole work .... 'There are 608 mentions of Khalil in the Kitab, many of which refer to whole chapters of the book.' (Reuschel, 1959,18)."

(Baalbaki, op.cit., 55)

"The really comprehensive picture of Khalil's teachings, which Beeston rightly notes that we cannot gain from the Kitab (Beeston, 1962,343), would be almost impossible to approach if the two

grammarians were to have to be treated separately."

(ibid.,56)

However, although it is unrealistic to claim the possibility of an overall investigation of alFarahidiy, in isolation, by evidence of the Kitab on its own, it would be quite realistic to approach alFarahidiy's linguistic legacy, in isolation, by evidence of the Kitab and other works where the master's views are singled out very clearly, and not interknitted with the context of almost every page; and as far as the master's phonetic legacy is concerned, it is quite feasible to plot out his views by the mammoth task of reconstructing it in the light of the works that contain his views.

In this concern, it has to be remarked that rudiments of systematization could be traced back to nahwiyyin prior to alFarahidiy. Nevertheless, systematization took shape primarily thanks to the inexhaustible flow of field material alFarahidiy collected in his scrutiny of the speech of the bedouins in Arabia, his critical and analytical observations on morphological, semantic and syntactic cases, and his phonetic perspective within which he delimited all linguistic phenomena. Therefore, it is quite tenable to suggest that, since the "/masaʔil/ and /ʔusul/" (Ibn-nNadim, 1964,51) (lit. postulates and originals) belong to



the Basrah School tutor, he could be considered the real systematizer of Arabic nahw. This conclusion, however, does not deprive Sibawaih of his own rights in keeping intact and further illustration of alFarahidiy's legacy. But still, in view of the abundance of evidence that alFarahidiy was the first to apply the notions of binary features in his treatment of Arabic phonology (alAzhariy, 1964,10,48-52; Ibn-Manḍūr, 1300 H.,iv) - something which Sibawaih fails to acknowledge in the chapter entitled alʿidgham, where he classifies and describes the segments of Arabic, presumably on the assumption that the chapter concludes the Kitab, and on the presumption that he hinted at some points in the course of the Kitab - one wonders how many times he failed to admit his debts elsewhere (cf. Weil, 1913,69).

In spite of the evidence at hand, we still come across impressionistic conclusions, such as the one reached by M.G. Carter (IQ.,xviii, 1974) where he claims that alFarahidiy

"was not a grammarian by inclination and temperament. While he could act as an inexhaustible informant for others, his own speciality lay in the (for him) closely related fields of lexicography and phonetics, on the one hand, and prosody and rhythm, on the other."

(1974,15)

Here, certainly, we have tokens of oversimplification and misinterpretation, where it is altogether possible to see the

repercussions of imposing terms from one form of linguistic approach on another form which is based on the conviction that all linguistic sciences form an integral, all-encompassing entity, with their substratum lying in the indispensable foundation of phonetics. This foundation is embodied in the term, nahw, which simply means the synoptic systematization of Arabic at all levels of linguistic analysis and synthesis, starting with the fundamental basis of phonetics and ending with the highest level of syntax, and is arrived at through an overall investigation of the speech of the Arabs, i.e. "the bedouins" (Blau, 1963). Within this context the term, grammarian, is clearly an inapplicable one. Yet, even if the speculation in the above quotation hits the truth, it hardly warrants the conclusion that alFarahidiy, in the Kitab, was merely an informant, no matter whether exhaustible or inexhaustible, simply because alFarahidiy-Sibawaih relationship is acknowledged, signed and sealed by the student in almost all pages of the Kitab; a neutral investigation of which would bring the researcher to our conclusion, above.

On closer inspection of Carter's view, we find that it is a composite illusion based on a translation error. If we investigate the trap in which Carter was caught we may trace it back to a passage in de Slane's translation (op.cit.,494) of Ibn-Khallikan's Biographical Dictionary - albeit an invaluable, painstaking and useful one - in a particular place, where Hamzalt -?ilsfahaniy assesses the position of alFarahidiy in Arabic linguistic studies. The translation reads as follows:

"Islamism never produced a more active spirit for the discovery of sciences which were unknown to the Arabs in their first principles, than alKhalil ... Had he lived in days of old, and were the traces of his existence distant from observation, persons would have doubted that such a man had been .... (listing alFarahidiy's contributions) and the aid he gave to Sibawaih by furnishing him with the grammatical information out of which he composed his celebrated book."

The etymology of Kitab aside, let us consider the Arabic original.

"فَإِنَّ دَوْلَةَ الْإِسْلَامِ لَمْ تُخْرِجْ بَدْعًا لِلْعُلُومِ، الَّتِي لَمْ يَكُنْ لَهَا عِنْدَ عُلَمَاءِ الْعَرَبِ أَصُولٌ، مِنْ  
الْقَدِيمِينَ... فَلَوْ كَانَتْ أَيَّامُهُ قَدِيمَةً وَرُسُومُهُ بَعِيدَةً لَشَكَّ فِيهِ بَعْضُ الْأُمَمِ... ثُمَّ سَرَّ  
إِعْدَادَهُ سَيِّبُونِيهِ مِنْ عِلْمِ النَّحْوِ بِمَا صَنَّفَ مِنْهُ كِتَابَهُ." (1892,216)

On translating the Arabic text again, the passage reads as follows:

"The state of Islam never produced, for the innovation of sciences which had no roots in the (knowledge of) the Arabs, a man more original than alKhalil .... Had he lived in days of old, and were his traces distant in antiquity, some people might have doubted that he had existed .... and furnishing Sibawaih with the science of nahw out of which he classified his book."

Not even Sibawaih's compatriot, al?isfahaniy, could deny that the original material in the Kitab had been provided by alFarahidiy who was an all encompassing linguist, par excellence. In fact, it is most surprising that a researcher, like Carter, could

be deceived by the expressions, 'grammatical information' and 'composed', on which he based his pronouncement on alFarahidiy as an informant without taking the trouble of consulting the Arabic originals.

Another issue to take with Carter is "the (for him) closely related fields of lexicography and phonetics, on the one hand, and prosody and rhythm, on the other".

Let us meet Carter on his own ground, and turn a blind eye to the fact that alFarahidiy was an all-encompassing linguist for whom all branches of linguistic sciences were related, and ask: If a morphophonologically-based lexicography is not affiliated with phonetics, what could it be affiliated with? Is it not really original and ingenious to approach lexicography on a detailed morphophonological foundation, the part and parcel of which is a realization of the syntagmatic and paradigmatic relations that underlie Arabic as a spoken language? Is it not very enterprising to inaugurate an approach to lexicography with an eye kept on the fact that phonetics constitutes the indispensable foundation for any theoretical or practical study of any given language, especially when that very language is rarely written, and entirely non-systematized? In fact, the answer to those questions has been provided by the eminent phonetician, Henry Sweet, in his statement

"The truth is that phonology (phonetics) is not only the indispensable foundation for all philology, but

also no department, from the highest to the lowest, can be fully investigated without it, whether it be accidence, syntax, or prosody, or the fundamental problem - the origin of language."

(1913,85)<sup>1</sup>

"It is now generally recognized, except in obscurantist circles, that phonology is the indispensable foundation of all linguistic study, whether practical or scientific - above all - of historical grammar."

(Sweet, 1891,xii)<sup>1</sup>

As for prosody and rhythm - which are, strictly speaking, technical terms that should not be tampered with - it is most desirable to point out that in all their literature, the Arabic linguists had always in mind the integral rhythmic unity of all the formal varieties of the Arabic speech, as can be simply substantiated by reference to their taxonomic terms: /kala.m/ (speech), /kala:m-manu.m/ (verse), and /kala:m-manu.r/ (prosaic speech), (c.f. alMubarrad, ed. Grunebaum, 1941); and by reference to Ibn-Khaldun's statement that "the Arabs thought highly of poetry as a form of speech" (ed. Rosenthal, 1958,374) which might be considered as an echo of alFarahidiy's axiom, "the poets are the princes of speech" (alHusariy, 1925, ii,232). Furthermore, in the modern terminology of Arabic verse, the terms /atTaqli:diy/ (lit. the imitational; tech. imitational of the traditional, metrical forms), /alHurr/ (lit. free; tech. with free distribution

<sup>1</sup> Cf. E.J.A. Henderson, 1971.

of rhyme, and non-traditional number of rhythmic feet in the line), and /alManθu.r/ (lit. prosaic; tech. lacking metricity and rhyme, but chiefly dependent on the harmony of sounds) are still pregnant with the implications of the unitary nature of rhythm in all forms of speech.

So far we have discussed the inapplicability of reducing alFarahidiy, the linguist, to the rank of an informant, as well as the unitary nature of morphophonologically-based lexicography, phonetics, rhythm and prosody. We must now twist the discussion to the historical material which bears evidence to the fundamental role of the Basrah School tutor in the Kitab. To accomplish our quest we have to fall back on quotations from the early generations of Arabic nahwiyyin and writers on the history of Arabic. However, before introducing those quotations, it is interesting to recall how J.R. Firth objectively, though implicitly, touched upon the point when he mentioned the two linguists in relation to the grammatical outline of Arabic, as follows:

"What modern linguist would wish to find serious fault with the grammatical outlines of Panini for Sanskrit, of Dionysius for Greek, of Donatus and Priscian for Latin, or of Šibawaihi and alKhalil for Arabic? Three very different systems, the Ancient Indian, the Greco-Roman, the Arabic, owe some of their excellence to their independence, to the absence of any international or universal dogma."

(Firth, 1951, reprint. 1957, 216)

Whatever else may be said, all sources of material agree that alFarahidiy is the major systematizer of the Kitab, and that Sibawaih's contribution to it was keeping intact, classifying and expanding the notes he had put down in lecture-courses under his master in the first place. Perhaps the following quotations from the early Arabic authorities may help illuminate this area for further investigation.

- (i) "Following the death of Sibawaih, Yunus-bn-Habi.b was told that Sibawaih had made a thousand-page book, based on alFarahidiy's science of Nahw. Surprised, Yunus said: 'When did he hear all that (material) from alKhalil? Do bring me his book.' Having read it all through, he commented: 'That man should have related what he had heard from alKhalil as honestly as he had quoted me.'"

(asZubaidiy, 1954,49; asSirafiy, 1955,48;  
Yaqut, 16,117)

- (ii) AsSirafiy adds that

"L'autorité sur laquelle repose l'exposition de Sîbawaihi, c'est Khalîl. Aboû Dja<sup>C</sup>far a dit: Lorsque Sîbawaihi, après avoir cité Khalîl, ajoute: "Et un autre a dit, "il se désigne ainsi luimême, parce qu'il plaçait Khalîl trop haut pour se nommer à côté de lui. Et lorsqu'il dit: "Je l'ai interrogé", c'est toujours Khalîl ... "Aboû Ishâk a dit d'après le kâfi Isma<sup>C</sup>îl ben Ishâk, qui le tenait de Naşr ben <sup>C</sup>Alî: J'ai entendu AlAkhfasch dire: Parmi les disciples de Khalîl il y en a

quatre hors de pair dans la science grammaticale: ce sont Sîbawaihi, Naḍr ben Schoumail, <sup>C</sup>Alî ben Naṣr, le père de ce même Naṣr ben <sup>C</sup>Alî et Mouʿarridj AsSadousi. C'est aussi Aboû Ishâḳ qui a dit: J'ai entendu Naṣr raconter le propos suivant de son père: Sîbawahi m'a dit, alors qu'il songeait à la composition de son livre: Viens que nous nous prêtions un mutuel secours pour faire revivre la science de Khalil."

(Derenbourg, 1881, i,xxviii,Ix)

(iii) Ibn-nNadim relates that he saw with his own eyes a marginal note by ʿaḳlab (815-904) which reads as follows:

"Forty-two scholars collaborated in making the Kitab. Nevertheless, the postulates and 'ʿusul' (treatment, methodology and terminology) belong to alKhalil."

(Ibn-nNadim, op.cit.,43)

(iv) AbuʿFayyib, in his "Categories", states that,

"AlKhalil excluded, Sibawaih was the greatest authority on anNaḥw. He interknitted his Kitab, which people called the qurʿan of anNaḥw, on alKhalil's wording and his."

(op.cit.,65)

Having thus identified the alFarahidiy-Sibawaih relationship, which adds nothing to the glory that was alFarahidiy, the phonetician, but sets the record straight, we can now proceed to identify the major contributions of this relationship. An



overall review of the Kitab accentuates the following points:

- (i) Speech was treated as a form of social behaviour the terms for which were imported from jurisprudence and ethics, and adapted to indicate structural correctness and social comprehensibility.
- (ii) Contrary to the Greek eight-part approach, three form-classes were treated as morphologically and semantically distinct, viz. nouns, verbs and particles. A priori, the harf (particle, in this context) was identified negatively as not morphologically ?ism (noun) or fi<sup>C</sup>l (verb), and not semantically meaningful. However, to cope with other morpheme-classes and homologous structures, seventy-five function-classes, in which the operator and operated-on derive from the very function, were identified.
- (iii) The principles of equivalence and substitution were applied to constructions in such a way that covered all syntactic units.
- (iv) The analysis was restricted to the surface structure, and a priori linear in approach; but the homologous structures could be differentiated by reference to semantic function.

## B.2 ALFARAHIDIY, THE LEXICOGRAPHER<sup>1</sup>

It seems evident that, despite the long-standing argument on AlFarahidiy's full authorship of al<sup>C</sup>ain, there is general agreement that, by and large, the plan and most of the views included are his. Recent investigations by Darwish (1955) - who identified the work as entirely his - Kraemer (1953), Wild (1965) and Bravmann (1971) have illuminated his authorship of the work, and pointed out the fact that there are certain lapsus scribendi and scribes' interpolations in the manuscripts, that have survived.

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<sup>1</sup> For an introduction to AlFarahidiy's lexicographical approach see Darwish 1955; also see Ibn-Khaldun, 1958, III,325-8.

It would be out of proportion to discuss the early views (cf. Darwish, 1955) over the authorship of the work. Yet, it is noteworthy that:

- (i) the rejectionists of his authorship in their very extreme based their rejection not on alFarahidiy's incapability to produce a work as such, but on the grounds that the work contains certain mistakes which could never have been made by one of his students (Cattar, 1967,85).
- (ii) irrespective of their rejection, they more often than not quote alḥain, verbatim.

The work is arranged, not according to the early Semitic order or the later Arabic order which was based on considerations of figural resemblances, but on morphophonological considerations. In fact, it has to be reiterated that the order is morphophonologically-based, and not phonetically-based, as has been claimed by several orientalists, who usually describe the order as alFarahidiy's phonetic alphabet. It is needless to say that by terming it as such, much harm has been done to the man's views, because it has given rise to the impressionistic conviction of an assumed conflict between alFarahidiy's order and the order introduced in the Kitab, although it does not take much toil to discover the strict parallel between the two orders if one has the patience and phonetic training to read and analyze alḥain and alKitab to the very end. The flesh of the matter is that the order, being worked out for lexicographical purposes, is based on morphophonological considerations, which constitute a reconciliation of his phonological system to serve

morphophonological ends. That alFarahidiy started his lexicon with the voiced glotto-pharyngeal fricative saying that it is the "deepest in the pharynx" (MS.2) by no means implies that he did not realize that the glottal stop and the voiceless glottal approximant are much deeper, i.e. glottal. Contrariwise, he states that:

"AlHamzah [i.e. the glottal stop] is the very deepest in the throat. It is firmly constricted. However, once it has been released, it becomes lax, and in consequence (provides the basis for) /i./, /u./ and /a./."

(MS.4)

"/u./, /i./, /a./ and the glottal stop are glottal segments,<sup>1</sup> because they are emitted from the glottis. They do not fit in the pharyngeal, lingual or uvular categories. They are articulations in the air stream."

(MS.6)

"They are segments of laxness and length. Their passages are the widest. There are no [approximants] more open than they are."

(alKitab, 1881,311, quoting alFarahidiy)

"Glottality (alHamz) is used to describe the segment which is constricted in the very depth of the

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<sup>1</sup> El-Saaran, 1951, interprets alFarahidiy's term /huru:f-ljauf/ as chest-sounds. However, by evidence of the reconstruction of alFarahidiy's description, where he states that /?alkunjur/ is /jau:f-lkulqum/ (the hollow space in the larynx), there is no reason why El-Saaran's term should be maintained any longer. (For alkunjur, see MS.268.)

throat. However, if this segment is de-constricted, it becomes breath. Thus the ha? (the voiceless glottal approximant) is produced."

(MS.272)

One particularly fundamental characteristic of his lexicographical approach is the realization of the indispensability of the phonetic perspective, without which any study of his works would be a leap in the dark. Amongst the fundamentals of his approach are the notions of paradigmatic relations, vowel harmonization, juxtapositional assimilation and historical assimilation, and similitude. In this concern, it is very interesting to notice that one of the occasions on which Sibawaih disagrees with his master is pertinent to alFarahidiy's explanation of certain items on the basis of juxtapositional assimilation; and it is likewise interesting to point out that the 20th century semitists<sup>1</sup> have come to verify his views on cases like /laisa/, which he explains in these terms:

"It is originally /la: ʔaisa/ (there isn't). The glottal stop has been dropped out, and the ya? has been attached to /l/ (in the absence of the idea of the diphthong, ya? - as it appears in writing - is used to indicate /ai/). This is substantiated by the rudimental expression of the Arabs /ʔi:tini. min ʔaiθu aisi wa la: aisi/ when they intend to say: Come to me from where there is or there is not."

(MS.691)

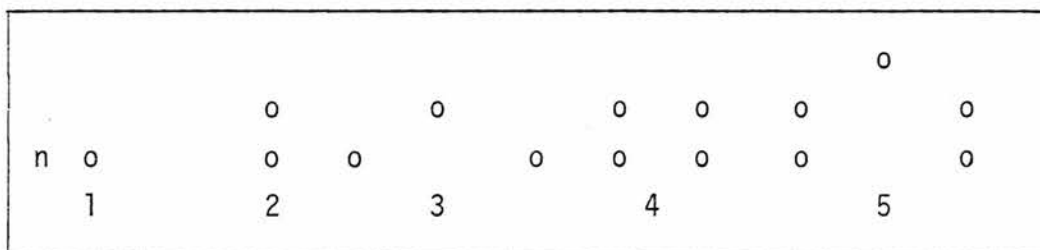
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<sup>1</sup> Cf. Bergstrasser (1929), 111.

$$\text{TPM} - (\text{PIC} + \text{PPNC}) = \text{MU}$$

where TPM stands for theoretically possible morphemes, PIC for phonologically impossible compounds, PPNC for phonologically possible but neglected compounds, and MU for morphemes in use.<sup>1</sup>

Let us imagine that we have five null graphs, i.e. null morphemes, denoted by the symbols 01, 02, 03, 04, and 05, where 1, 2, 3, 4, and 5 indicate the number of phonematic units within the morpheme-boundaries, and n stands for null vertices and no lines, i.e. no phonematic units and no prosodies of synthesis, as shown in the figure below.



Now, if we connect each pair of vertices by a line, where the

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<sup>1</sup> (cont. from previous page) to alFarahidiy's lexicon, Al<sup>C</sup>ain, in which he presents his mathematical treatment of the morphemes in Arabic:

"Bear in mind that the bi-phonematic structure (involving two phonematic units in the Firthian sense) gives us two structural permutations:

e.g. /q/ /d/ → /q<sup>a</sup>d and /d<sup>a</sup>q/

The tri-phonematic structure gives us six structural permutations. This type we call hexagonic.

e.g. /d/ /r/ /b/ → /d<sup>a</sup>r<sup>a</sup>b/, /d<sup>a</sup>b<sup>a</sup>r/, /b<sup>a</sup>d<sup>a</sup>r/, /r<sup>a</sup>d<sup>a</sup>b/, /r<sup>a</sup>b<sup>a</sup>d/, and /b<sup>a</sup>r<sup>a</sup>d/

The quadri-phonematic structure gives us twenty-four structures; i.e. you multiply the number of phonematic units in the quadri-phonematic structure by the (possible) number in the tri-phonematic structure, and this gives you twenty-four possibilities, some of which are /musta<sup>C</sup>mal/ (in use), but others are /mu<sup>h</sup>mal/ (neglected).

e.g. /<sup>C</sup>/ /b/ /q/ /r/ → /<sup>Ca</sup>bq<sup>a</sup>r/, /<sup>Ca</sup>br<sup>a</sup>q/, /<sup>Ca</sup>qb<sup>a</sup>r/,  
/<sup>Ca</sup>qr<sup>a</sup>b/, /<sup>C</sup><sup>a</sup>rq<sup>a</sup>b/, /<sup>C</sup><sup>a</sup>rb<sup>a</sup>q/,  
/q<sup>a</sup><sup>C</sup><sup>a</sup>rb/, /q<sup>a</sup><sup>C</sup><sup>a</sup>br/, /q<sup>a</sup><sup>a</sup><sup>C</sup>br/,  
/q<sup>a</sup><sup>C</sup><sup>a</sup>rb/, /r<sup>a</sup><sup>C</sup><sup>a</sup>qb/, /q<sup>a</sup><sup>b</sup><sup>C</sup><sup>a</sup>rb/,  
/q<sup>a</sup><sup>rb</sup><sup>a</sup><sup>C</sup>/, /r<sup>a</sup><sup>bq</sup><sup>a</sup><sup>C</sup>/, /r<sup>a</sup><sup>q</sup><sup>C</sup><sup>a</sup>b/,  
/r<sup>a</sup><sup>qb</sup><sup>a</sup>?, /r<sup>a</sup><sup>b</sup><sup>C</sup><sup>a</sup>q/, /r<sup>a</sup><sup>C</sup><sup>a</sup><sup>b</sup>q/,  
/b<sup>a</sup><sup>C</sup><sup>a</sup>qr/, /b<sup>a</sup><sup>C</sup><sup>a</sup>rq/, /b<sup>a</sup><sup>q</sup><sup>C</sup><sup>a</sup>rb/,  
/b<sup>a</sup><sup>a</sup><sup>C</sup>qr/, /b<sup>a</sup><sup>r</sup><sup>C</sup><sup>a</sup>q/, and /b<sup>a</sup><sup>rq</sup><sup>a</sup><sup>C</sup>/.

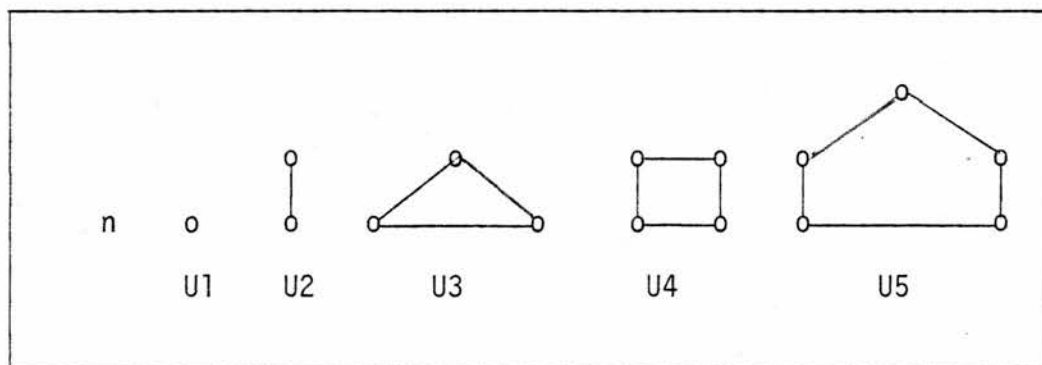
The quinqu-phonematic structure gives us one-hundred-and-twenty permutations: that is, you multiply the number of the phonematic units in the quinqu-phonematic structure by the (possible) number in the quadri-phonematic structure, and this gives one-hundred-and-twenty permutations, of which a few permutations are in use, but most are neglected.

e.g. /s/ /f/ /r/ /j/ /l/ → /s<sup>a</sup>f<sup>a</sup>r<sup>a</sup>j<sup>a</sup>l/, /s<sup>a</sup>f<sup>a</sup>r<sup>a</sup>l<sup>a</sup>j/, /s<sup>a</sup>f<sup>a</sup>j<sup>a</sup>r<sup>a</sup>l/,  
(Ms.7)

We begin (this work) with (the volume on) Al<sup>C</sup>ain (the nomen for /<sup>C</sup>/) in combination with what follows it (along the vocal tract) until we come to /almi.m/ (the nomen for /m/). (Ms.2.7.)

Here we start with the stable, bi-phonematic structure because it is the lightest in articulation and the simplest to understand."  
(Ms.7)

line-connection indicates a prosody of synthesis - i.e. /harakah/ <sup>1</sup> = [a transition], a portion of a V-unit, [hence a minimal recognizable unstable sound] - the resultant graphs may be represented by U1, U2, U3, U4, and U5, respectively. In this representation, U1 stands for one phonematic unit, while all other U's stand for phonematic units connected by lines which represent the possibility of a harakah being present. The expression +harakah signifies its actual realization whereas -harakah represents its absence (cf. p.244 re. suku.n). Therefore, it is + if it occurs as a syllable-crest, and - if it is absent. The figure below shows the connected o's.



Illus. 4 : Vertices and lines, representing phonematic units and transitions

Again, if we consider n and U1 as sterile minimals incapable of generating /kalima.t/ = meaningful speech units, and linearly multiply the number of resultant morphemes by the number of o's in each succeeding U in the mathematical sequence, we obtain the following theoretically possible number of morphemes:

<sup>1</sup> For AlFarahidiy's view of alharakah see p.244.

n0	xU1	——	nM
U1	xU2	——	2M's
2M's	xU3	——	6M's
6M's	xU4	——	24M's
24M's	xU5	——	120M's

Illus. 5 : Theoretically possible morphemes

However, the theoretically possible potential does not correspond with the number of morphemes in use, due to the fact that a number of the theoretical potential is rendered redundant by certain phonetic impossibilities, such as

"The (U2) /<sup>C</sup>/ never coalesces with /h/ in one word due to the proximity of their places of articulation",

(MS.7)

and by the particular selection of certain items from the phonologically<sup>1</sup> possible potential. It follows from this that his general formula is **quite** a feasible one.

### B.3 ALFARAHIDIY, THE MUSICOLOGIST

It is hardly possible to assess the position of alFarahidiy, the musicologist. Whether his two books, anNagham

<sup>1</sup> Here is a translation of the prefatory notes to the first chapter of the first volume.

"The Chapter on the Bi-phonematic, Stable Structure:

/<sup>C</sup>/ never coalesces with /h/ in one word, due to the proximity of their places of articulation.

/<sup>C</sup>/ and /q/: All segments which are articulated between the places (cont.)



(Modes) and alIqa<sup>C</sup> (Rhythm) contained a musical theory or not, we do not know for certain since both works, as far as we are aware, have perished. In actual fact, apart from the historical pieces of evidence about

"his musical knowledge which enabled him to invent the science of prosody",

(alQiftiy, 1903, vi,171; Yaqut, 1927, iv,182)

and "the knowledge which he possessed of musical rhythm and melody"  
that "must have led him to the discovery of prosody, in consequence of the close analogy between them",

(Ibn-Khallikan, op.cit.,495)

we have no clue whatsoever to illuminate this area except his approach to verse structure as well as the mathematical notation and rhythmic mnemonics he innovated on generative basis. Whatever the case, later generations of musicologists, particularly AlFarabiy and Ikhwan-sSafa, maintained his notation and prosodic approach in their mensural, musical theories.

The following quotation, attributed to alFarabiy (ca. 870-95)) by H.G. Farmer (1934,63-4) may help cast a light on the impact which alFarahidiy's terminology had on the early Arabic musical theory due to the close relation between the homophonic nature of Arabic music (Helmholtz, 1954,237; Farmer, 1929,72) and Arabic verse structure.

<sup>1</sup> (cont. from previous page) for /C/ and /q/ with the exception of /h/ are possible combinations with /C/ but neglected; i.e. /C/ with /h/, /d/ and /X/ are possible but neglected. /C/ and /q/ give /C<sup>a</sup>q/ and /q<sup>a</sup>C/. Both speech-forms are in use."

According to Farmer, in the Latin "Liber introductorius in artem logicae demonstrationis",<sup>1</sup> which he believes has an almost word for word relation with the 13th treatise of Ikhwan-ṣṢafa (Dieterici's text, 1887-9, i,2; Cairo ed. 1888-9, i,307), there is a passage concerning music which reads as follows:

"Spiritalia uero spirantia sunt ut cantus qui est in numero sonorum ordinatorum. Sonus uero componitur ex tonis proportionalibus et uersibus metricis. Uersus uero compununtur ex pedibus. Sed pedes componuntur ex syllabis. Unaquaeque autem syllabarum componitur ex litteris uocalibus et consonantibus. Nemo autem cognoscit hoc nisi qui nouit proportiones musicas."

Translation of the Arabic text:<sup>3</sup>

"And this is an example from the spiritual and sentient. And it is our saying<sup>2</sup> (that) song (ghina?) indicates measured melodies (alḥan), and melody is composed from concordance notes (naḡhamat) and metrical verses, and verses are composed from feet, and feet (are composed) from awṭad and asbab, and each of these also are composed from movent and quiescent letters. And only the prosodist and he who theorizes in the ratios of music discern these things."

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<sup>1</sup> For the translator into Latin, see Farmer, 1934,64-5.

<sup>2</sup> Reference is here made to another passage which runs as follows:

"Song is compounded from melodies, and melody compounded from notes, and notes arise from beats and rhythms. And the origin of all of them is movement and rest, just as all the poems are compounded from hemistichs, and hemistichs are compounded from feet, and feet from asbab and awṭad and fawasil. And the origin of all is movent and quiescent letters."

(Farmer, 1934,64)

<sup>3</sup> Cf. Ikhwan-ṣṢafa, above.

The fact that Arabic music is mensural and homophonic in principle and the fact that Arabic musicologists based their works on his prosodic approach to verse structure suggest that alFarahidiy had a fundamental impact on the early development of Arabic musicology. On the basis of the facts pointed out in Farmer's works and Grove's Encyclopaedia of Music (1973) that pseudo-Aristotle (?), the British composer and writer on music, together with Franco of Cologne (ca.1270) - who introduced mensural music into Europe - based their works on passages from a treatise, entitled "Divisio Philosophica" by Michael the Scot (d.ca.1325)

"of which we only know to-day through quotations from it by Vincent of Beauvais, (from which) we see that he also borrowed from 'De ortu Scientiarum' although probably through the pages of Gundissalinus's 'De Divisione Philosophiae' which dates, in all probability, from the mid-twelfth century."

(cf. Farmer, op.cit.,5-2,19);

and bearing in mind that "De Ortu Scientiarum", is attributed to alFarabi who based his musicological approach on alFarahidiy's approach to verse structure, we can at least espy the motive behind the statement of Ishaq-lmu:siliy (d.850), the great Arabic musicologist and musician (GEM, 1973, V,550) who, on being praised by Caliph alMahdiy, a musicologist and musician as well, for composing an excellent work on music, replied:

"Extolment is alFarahidiy's own right because he paved the way to excellence."

(alMakhzumiy, 1972,98)

### C. PRELIMINARY CONCLUSION

By the nature of his subject, phonetics, on which many scholarly fields come to bear, and in which he was facile princeps whose position has never been eclipsed, alFarahidiy was a hundred scholars in one. Nevertheless, although he is usually showered with lip-service, his real value to Arabic linguistic studies, in particular, has hardly been realized because most of the researchers who intended to give him homage approached his legacy, for lack of rigorous phonetic training, on philological terms; and a priori, because of the incongruent approach they failed to scrutinize the very nucleus of his works, i.e. phonetics; and equally, those who dug out and could explicate his phonological theory refrained from doing so because that would entail ipso facto the acknowledgement of considerable indebtedness.

It will stand to all layers of reason that such an original and ingenious man did exist, and nobody except a tyro or a paradoxer is ever likely to dispute his scholarship. Whether he was a great phonetician, within his historical context, is yet to be proven in the areas to be discussed. However, he was undoubtedly an all-encompassing linguist in the full and varied sense of the term. His critical and analytical mentality was very acute, allowing him to make linguistic observations, in which we find originality and ingenuity rather than rehearsal and memorization, so much so that Ibn-Imuqaffa<sup>C</sup> (720-756) - the translator of the Indian fables of Pančatantra and Tantrakhyakayka (JRAS, 1915,

505) - after a session of debate with alFarahidiy, commented on this aspect of his personality by saying:

"I have met a man whose mentality is far superior to his readings."

(alMarzubaniy, op.cit.,57)

Fertile as the study of his life in general has proven, there is no doubt whatsoever that no point in his linguistic legacy is more characteristic than his incontrovertible realization - practically though - of the indispensability of the phonetic grounding for all fields of linguistic research. In this respect nothing is more illuminating than his persistence, despite the unyielding opposition of his contemporaries, including Sibawaih and later generations of Arabic linguists, in the explication of certain lexical items on the basis of historical assimilation.

His phonological approach which can be, strictly speaking, termed proto-prosodic analysis, appears very similar to what is practised at one of the modern schools of linguistics, but then we realize that in fact it comes from the Basrah School tutor whose phonetic observations have never been superannuated by time and whose value was to become apparent only to phoneticians.

The importance and distinction of alFarahidiy's position are witnessed, amongst other things, by the size and efficiency of

his innovations and contributions to the Arabic linguistic studies, which include the following:

- (i) The major part he played in the systematization of Arabic nahw on a structuralist type of analysis, where language is treated as a form of social behaviour, and where utterances are analyzed on the bases of three form-classes and seventy-five function classes, each of which is reduced to binary units, with a clear view of the principles of equivalence and substitutability.
- (ii) The major part he played in the systematization of the homophonic, mensural Arabic music, by reference to his prosodic approach to verse structure.
- (iii) The systematization of Arabic verse structure on a thorough phonological analysis and synthesis of Arabic, in the light of an overall scrutiny of the speech of the Arabs in Arabia.
- (iv) The prosodo-phonematization of the Arabic script on articulatorily-descriptive, alphabetic and phoniconic bases.
- (v) The planning and compilation of the first Arabic lexicon on morphophonological, generative bases.
- (vi) The discovery, analysis and description of the segments of Arabic in terms of structure and system within the context of a multidimensional, polysystemic approach.
- (vii) It is not unworthy notice that he practically separated the Arabic linguistic studies from Qur'anic exegesis and readings where they had originally hatched - something which seems quite natural in our present times, though it is, in effect, a far more liberal change than it would seem.

Unfortunately, most of alFarahidiy's works have not come down to us directly from his own reed-pen, but through his students who noted down his lectures, not without lots of lapsus scribendi. However, it remains to be acknowledged that had it not been for his

students and followers, namely <sup>C</sup>amr-bn-Bishr-bn-Qanbar (d.ca.809), pen-named, Sibawaih, Muʿarrij-sSadusiy (d.811), anNadr-bn-Shumail (d.ca.818), alAkhfash (d.ca.822), and alLaith-bn-IMuḥaffar (?), amongst others who preserved his linguistic legacy to posterity, such an ingenious linguist could have been buried into oblivion. It is to all his biographers, students, and followers that posterity owes a debt of gratitude, which is by no means comparable to the invaluable debt they owe him.

The survival of his approach for twelve centuries bears witness to his ingenious insight into linguistic studies which he based on the indispensable foundation of phonetics; and the dethronement of some of his phonetic observations inflicts no harm on his eminence in our field due to the fact that being surpassed does not necessarily mean being superseded.

Now that the years of alFarahidiy's life have been surveyed in less than as many pages, we need cast no sight at the route behind us, which hopefully has been made fairly clear. No doubt there may be some differences on certain minor points, and there may be differences, not unwarranted, on major points, which may be kept as matters of suspended discussion until the final conclusion has been reached. Be that as it may, in any attempt to give "to Cesar the things that ben Cesaris", a researcher, with the reasoned orthodoxy in mind, has to uncarpet others. In that

respect no apologies are extended because, just the end is, and  
hopefully, just the means will be.



*1*

*ARABIC VERSE STRUCTURE*

*AND AL-FARAHIDIY'S*

*PROSODIC APPROACH*

## EPITOME

An exhaustive and comprehensive review of the applicability and application of the idea of isochronicity to rhythm as one of the components that comprise the voice dynamics, which altogether constitute a strand in the aural medium, has yet to be written. This needs to be done in the light of the coherent relationship between prosody (Jonson, Eng.Gram,i, trsl. Scaliger, 1637; Murray, 1824,I,345) on the one hand, and Phonetics (Abercrombie, 1965,17; Allen, 1973,15) on the other, and the indivisible correlation between verse and prose (Aristotle, trsl. Margoliouth, 1911; alFarabiy (d.950), 1953,149-57 ; Qudamah (d.922), 1956,8; Ibn-Rashiq (d.1064), 1955,i.20; Ibn-Khaldun (d.1405), trsl. Rosenthal, 1958,iii,381f.,392; Wordsworth, 1800,Pref.note; Eliot, 1942,117) as derived from the rhythm of ordinary speech (alFarahidiy, op.cit.; Steele, 1779,11; Miller, 1902,499; Thompson, 1961,167; Watkins, 1963,218; Abercrombie, 1967,98; de Groot, 1968,537). General and partial works on rhythm, which suffice their ends as far as they go, are available, (e.g. Saintsbury, G., 1906-10; Fijn van Draft, 1910; Omond, T.S.,

1921; Sonnenschein, E.A., 1925; Barkas, P., 1934; Whitehall, H., 1951; Chatman, S., 1956; Stein, A., 1956; Ransom, J.C., 1956; Woo, N.H., 1969, for English; Thomson, W., 1923, 1926; Sonnenschein, op.cit., for Greek and Latin as well as English; Postgate, J.P., 1924; Schmiel, R.C., 1968; Newton, B.E., 1969, for Greek; Postgate, J.P., 1923; Allen, W.S., 1969, for Latin; Arnold, E.V., 1905, for Vedic metres; Freytag, G.W., 1830; Ewald, H., 1833; Palmer, E.H., 1874; Hartmann, M., 1894; Wright, W., 1896-8; Hoelscher, G., 1920; Bloch, A., 1946, 1951; Weil, G., 1954, 1958, for Arabic.) Nevertheless, most of the prosodial works suffer either from the inconsistencies of vague and incommensurable terminology and the fault of assimilating and reproducing a given language, measured by a Greek yardstick (e.g. Foster, J., 1820), or from a chronic preoccupation with the history of prosody at the expense of the phonological phenomena which underlie the prosodial systems of languages (e.g. Guest, E., 1838) - something from which the phonetician as much as the prosodist can profit if such historical surveys bother to interpret the phenomena. None the less, if interpretation is ever attempted by non-phoneticians, and even by linguists with no phonetic training and background, it is more often than not foamy and misinterpretative (Elwell-Sutton, 1976). However, despite the excellent work that has been done on Arabic over the last 150 years, there has been no attempt - as far as I am aware - to approach Arabic verse structure within the General Phonetic perspective, most specifically

the rhythmicality engendered by "the periodic recurrence of the stress-producing process" (Abercrombie, 1967). In actual fact, without the Stetsonian approach to verse structure, alFarahidiy's systematization of Arabic verse structure, which he based on "his knowledge of beat and melody" (Freytag, 1830) in combination with an overall prosodic systematization of Arabic phonology and a sound understanding of the temporal relations underlying Arabic, could hardly ever be understood.

In order to present a reasonably comprehensive picture of alFarahidiy's systematization of Arabic verse structure, a method incorporating the historical and the analytical has been adopted.

Following a general historical thesis that it is against the logic of the gradual and cumbersome acquisition of knowledge and the development of systematized methodology that one person - no matter how much a genius he is and whether that person be alFarahidiy or any other person - should have been the scratch line and could have improvised a fully fledged system, hints in the direction of the background and locality of antecedent attempts at systematization in the Semitic speaking area are searched for.

After a brief introduction of the Arabic linguists' view of the unified nature of verse and prose as based on speech, and of the line as an integral syntactic and semantic unit, our plan is carried out as follows:

First, alFarahidiy's parentage of the present day Arabic prosodic theory is substantiated.

Second, we proceed to redefine the Science of alFaru.d in the light of the material available in his lexicon and other references that have more or less preserved his prosodic legacy to posterity.

Third, an exposition of the segmentational, phonological procedures, involved in his system, is presented.

Fourth, the generative circles, which he based on the mathematicological principles of equivalence, substitutability, reversibility, potentiality and actualization in his systematization of the potential and performed Arabic rhythmic patterns, are introduced.

Fifth, moving from the historical to the analytical, alFarahidiy's approach as applied to modern Standard Arabic within the perspective of General Phonetics is discussed.

Sixth, this area of alFarahidiy's legacy is concluded with a summary of the characteristic features of his system.

## A. HISTORICAL PREVIEW

The concrete linguistic aims on which the Arabic poetic and literary analysis was established - i.e. keeping intact the language of the Koran, which has been described as "speech Arabic, manifest" (K.,16,105), and "in a clear, Arabic language" (K.,26,156), in the same way as the Sanskrit grammarians aimed at keeping intact the language of the Vedas (Robins, 1967,97) - imposed a fundamental course on the analysis of verse. In its importance was concentrated on the phonological, lexical, semantic and syntactic fields, because after all ancient verse was always the expedient to which the early Arabic linguists resorted in their exegesis of the Koran. And at the very root of that course, lies the Arabic linguists' "all-encompassing concept of human speech, of which poetry is only an extrinsic and accordingly accidental division", (Cantarino, 1975,41).

It has been generally agreed that the systematization of Arabic verse structure per se was invented by alFarahidiy in his work, /alFaru.d/. Nevertheless, it would be against the logic of evolution to suggest that such an elaborate system began from scratch in isolation from a long previous study, education in linguistic analysis, as well as previous attempts at systematization. This is especially the case when one takes into account the fact that the Arabic culture of that era represents a culmination and synthesis of a succession of human, civilized labours which began - if not before -

with the Sumero-Akkadians in 4000-5000 B.C. (Moscatti, 1959), from whom "the Egyptians took over the principles of writing, ready made" (Woolley, 1963,645; also Frankfort, 1941,329-358; Kantor, 1942, 174-213; Gelb, 1952,215). One must remember the fact that prior to alFarahidiy's systematization "the language of administration in Syria (in the early years of the Umayyad Dynasty, until A.D. 693) was Greek" and that "soon the builders and administrators inherited the mathematics, and the ability to use it, of their Greek", or rather, we may say "since Babylon 1894-539 B.C., after all, is only sixty miles from Baghdad, of their Babylonian ancestors" (Darlington, 1969,195). The Babylonians were familiar with square and cube roots and with how to solve linear and quadric equations involving two or more unknowns, and "performed scientific exercises of geometry which for the Egyptians were a closed book" (Woolley, op.cit.,676). Thus the Babylonian knew "the theorem of Pythagoras" about the square of the hypotenuse of a right-angled triangle being equal to the sum of the squares of the other two sides, and again by discovering the method of finding right-angled triangles whose sides are expressed by integers, he anticipated the findings of Pythagoras "by fifteen hundred years before Pythagoras and his Greek followers" (Woolley, op.cit.). And for further illumination of the Babylonian civilization, their priests and priestly scribes invented the first calendar to which the world owes the division of the day into twenty-four hours, the hour into sixty minutes, and the minute into as many seconds (Robinson, 1958,47). In the field of surgery,

nothing is more illuminating than the Code of Hamurabi (2250 B.C.), wherein the fees to be paid to a physician if he treated a person for a severe wound, with a bronze lancet, and has cured the man; or has opened the abscess of the eye with the bronze lancet and has cured the eye, and if the doctor has cured the shattered limb or the diseased bowel, are determined; and wherein the penalizing of the quack is also determined. In music, Babylonia was rich in musical instruments which included instruments of percussion (clappers, drums, timbrels, and sistra), wind instruments (flutes, pipes, horns and trumpets), and stringed instruments (harps and lyres), (Galpin, 1929,1955; Sachs, 1944; Farmer, 1953).

As for their literature (cf. Meisener, 1927-8; Peet, 1931; Kramer, 1944), what strikes us most is the form of the Babylonian lyric poetry, which if carried to its logical evolution, finds its parallel in Arabic poetry and its elaborate systematization in alFarahidiy's system, which in all probability has its Babylonian connection, as might be deduced from its mathematicalness. What characterizes the Babylonian lyric poetry, to quote the authority of Sir Leonard Woolley (1963,800), is the following:

"The text is divided into lines (each of which may be again separated into two-half lines); each line contains a more or less fixed number of stress accents and is a complete sentence; the lines are grouped into strophes consisting generally of two pairs of





lines or into half-strophes consisting only of one pair; each strophe is a complete unit of thought."

The thesis expounded here, that alFarahidiy's system is a culmination of a long previous study and attempts at systematization which might have had their Babylonian connections, is not in any way a speculation in prehistorical reconstruction. On the contrary, it is a recognition of the direction of the movement of history attested by ethnology, and well supported by historical linguistics and human history.

AlFarahidiy, a Southern Arabian who grew up in Southern Mesopotamia, when asked whence he had acquired his linguistic knowledge, replied "In the wastes of Najd, Tihamah and alḥijaz" (alAnbariy, 1294, H.,83). And whenever a scholar of his expressed his ambition to increase his linguistic knowledge, his recommendation was always a long stay amongst the bedouins of Central Arabia, as though it had been realized, through pagan, genealogically-tribal relationships as well as readings in the Old Testament, the New Testament and the Koran, that Central Arabia had provided the early habitat of evolution from a pastoral to an agricultural life, from nomadic to settled conditions in Eastern Arabia, Mesopotamia, Syria and Southern Arabia. In fact, this direction of evolution can be well substantiated simply by a line from the cult of fertility in the Ugaritic literature, where the line itself still reflects the pastoral and nomadic background of the Ugaritic

community in the 2nd millenium B.C. The line reads as follows:

		TRANSCRIPTION
UGARITIC:		/t-l s-m s-mn ?-r-( )/
ARABIC:		/ta-l-ssama.? samn-l?ard/
TRANSLATION:		The dew of heavens is the fat of the earth

Illus. 6. T-l, s-m- s-mn ?-rd in Ugaritic and Arabic

A recommendation of this kind, apart from furnishing the basis for a sort of field work for an Arabic scholar, would point in the direction of the possibility, or at least the probability, of the realization of the relations which held between the settled zones around the Arabian desert and the wastes of Najd, Tihamah and alHijaz.

As a matter of fact, such relations have been recently reaffirmed by historical, ethnical and linguistic researches, whereby it has been propounded that the Akkadian and Babylonian civilizations were Semitic-speaking civilizations, "whose descendants are the Bedouin of today" (Darlington, 1969,95), and whose ancestors were the nomads of the Arabian desert (cf. Moscati, 1955; Kupper, 1957). However, if the thesis of the authorities on the subject is disputed on whatever grounds, the very persistent question would still impose

itself: How can we get away from the proven fact that the more one goes back in the study of the linguistic phenomena of Mesopotamia and Syria - take the case of Old Akkadian and that of the Ugaritic - the more closely they are linked in unity with Arabic? And similarly, how are we to reconcile the view of semitists that despite the relative latency of the Arabic textual prominence, "the Arabs had preserved to the Sixth and Seventh century of our era, far more of the ancient form of Semitic speech than any of their congeners" (Wright, 1890,27), unless we take into account the only possible hypothesis that the wastes of central Arabia should have provided the sheltered area for proto-Semitic?

Restricting ourselves to our thesis that it is contrary to the gradual and cumbersome acquisition of knowledge and the evolution of systematized thought and methodology that one man, no matter what a genius he was, should have been the scratch line and should have improvised everything, we may say right away that hints in the direction of our thesis are not lacking; and we may here anticipate the conclusion that the body of data suggests: the process of systematization should have followed a long series of previous studies in the art of expression and various attempts at systematization which finally found their ultimate and elaborate manifestation in alFarahidiy's system. Of course, because of the lapse of time and the scarcity of written records from the early Arabian times, we are not in a position to state with certainty how and whereabouts in the Arabic-speaking area the various attempts

were made, but we can at least fumble our way in the literary history of the Arabs.

The first hint towards a solution is given by the critical attitude of the Ancient Arabs in the field of verse. In accordance with the Arabic tradition, which by no means can be discarded, poetic tournaments used to be held at the fair of /ʕukaʔ/ near Mecca after the pilgrimage season in pagan times, and the winning poem was written and suspended on the wall of alKaʕba where it remained until it was superseded by a winning poem in the year to follow. Hence, the term /alMuʕallaqat/ (ʕallaq = hang up; suspended) was coined to describe the masterpieces in the days of Idolatry (cf. Blunt, 1903; Arberry, 1957). In later times, similar debates took place at alMarbid (alMakhzumiy, 1972, 9), in the outskirts of alBasrah where the Basran linguists used to hold discussions with the desert authorities.

In fact, those tournaments and debates confront us with the inevitable question of what criteria could have been used to judge the quality of poems of such excellent calibre; and the relevant question of could any judgement have been passed without taking the metrical element into account; and to what extent would such a judgement be realistic without a discussion of the overall quality of those poems? Such a quality of poems,

"in which a series of themes are elaborated with unsurpassed vigour, vividness of imagination, and

precision of imagery, in an infinitely rich and highly articulated language, showing little or no traces of dialect, and cast into complex and flexible metrical schemes that rhyme throughout the poem"

(Gibb, 1963,13);

in a language

"largely uniform in vocabulary, and absolutely so in morphology and syntactical refinement"

and in which

"there is precise tense structure for principal clauses, and a delicate modal system operated by case endings. Superimposed on the original autonomy of the component clauses is a scheme of logical subordination, perfectly uniform in its application and capable of expressing every relationship between the clauses. How this linguistic instrument, rich and flexible beyond anything known in other Semitic languages, was evolved, remains an unsolved problem."

(Gibb, op.cit.,10)

Or, in the words of Lyall (1885, XV):

"The number and complexity of measures which they use, their established laws of quantity and rhyme, and the uniform manner in which they introduce the subjects of their poems, notwithstanding the distance which often separated one composer from another, all point to a long study and cultivation of the art of expression and the capacities of their language, a study of which no record remains."

Besides Lyall and Gibb, the same view is shared by Arberry (1965,4) who states that:

"There in the sandy wastes, upon the fringes of settled civilization, a group of perennially warring tribes united only in the possession of a common language, invented, and brought to a high state of refinement without the benefit of schoolmen, a form of poetry unique in its kind of complex prosody and dazzling imagery."

In searching for hints in our investigation we have so far touched upon the existence of a highly developed genre of verse in pagan Arabian times, which could never have been brought to such a state of refinement in a short span of history. The second hint is the Koran itself,

"where form is subordinated to the presentation of the message and in forcing the High Arabic idiom into the expression of new ranges of thought it developed a bold and strikingly effective prose in which all sources of syntactical modulation are exploited with great freedom and originality."

(Gibb, 1963,36)

In actual fact, the linguistic artistry of the Koran - the balancing of phrases, giving emphasis by parallelism in structure, assonance, the elaborate exploitation of the figures of speech, harmony of sound combinations and the balancing of

rhythmic effects with the psychological implications of the phrases - entails the very persistent question:

Could such a book have been addressed to a community unless its élites, if not a reasonable number of that community, had had a fair amount, if not an equivalent, of language consciousness which, logically speaking, arises from education in the language itself?

So far by recalling the two linguistic phenomena of which we have written records, we have made our point that there should have been a sort of linguistic consciousness in pagan Arabian times. Let us then yield our minds to the second branch of our thesis, which perhaps would lead us towards the light.

Confining our attention to the areas which might have provided the habitat for earlier attempts at systematization, the first test of historical data gives us two options: (a) central Arabia, or (b) the mercantile centres on the fringes of the Arabian Peninsula. However, central Arabia could be excluded on evolutionary grounds; that is to say, any serious attempts should have followed a long state of urbanization; which leaves us with no other option but the mercantile centres. Nevertheless, a survey of those centres reduces the possibility to Southern Arabia, particularly Arabia Felix, and Northern Arabia. Yet, although both areas may have a just claim to the possibility, the principle of uniformity and continuation of civilized progress, if we take

the Arabic script as an indicator, votes in favour of the Northern Arabian centres, primarily Palmyra, Petra and alHirah, which were in direct and continuous contact with the prime of the ancient civilizations in the Syro-Mesopotamian region. Of all those centres, alHirah occupies a very special position because one can safely appeal to the evidence of archaeology (cf. Wiseman, 1956, rev. BM.21946) which confirms the Arab history of the town, as explained by (Yaqut, 1866, ii,375-379) who asserts that it settled cheek by jowl with the civilizations of the area, where it acted as a buffer zone between the tribes of Arabia and their kin in Syria and Mesopotamia at least since the reign of Nebuchadnezzar (6th Century B.C.).

Further justification of alHirah's special place arises from the fact that it was the cradle of the Northern Arabic script. In fact, in a retrospective perspective, since the art of writing seems to arise naturally and almost inevitably from the condition of urbanization and also seems to be essential to its maintenance; and since civilization generally implies the development of city life so writing has always been introduced in urban societies; we may quite safely conclude that the Arabic script amongst other intellectual concerns should have followed a period of urbanization at alHirah, which may be described as a dolce vita of sophisticated affluence, situated on the confluence of two major interacting currents, the pagan Arabian and the Babylonian one, which made of it



a cultural melting point so much acknowledged that the Persian King, Yazdigird, the First, sent his son, Crown Prince Bahram Ghur (430-8 A.D.) to the Arab Lakhmid court in the city to be educated in the cultural accomplishments of the Arabs at that time (cf. al-Tabariy's *Annales*, ed. de Goeje, i,185; also see Farmer, 1934, 52) - something which points into the direction of the possibility that the Arabo-Syro-Mesopotamian cultural heritage was kept intact in al-Hirah where, besides other studies, the study of music was allied to the study of poetry (Huart, 1903,12; Nicholson, 1907,37) in the same way they were later to be allied and mathematically systematized in al-Farahidiy's prosodic approach to Arabic verse structure.

In examining the indicators towards the plausibility of the thesis we set ourselves to enquire, we have determined what the body of data suggested:

Al-Farahidiy's system could never have come from the blue; there should have been several attempts at systematization, very likely at al-Hirah, which found their final and elaborate manifestation in his prosodic system. Such a system, with all its accuracies and phonetic foundation probably had a Babylonian connection, of which we have no records, so far. Nevertheless, we can hope that some fortunate discovery will one day reveal the dimensions of such a connection.

## B. SPEECH, VERSE AND SENTENCE

In the foregoing preview we started with the thesis of the possibility of identifying alFarahidiy's system within a larger Semitic framework with special reference to alWirah, which gained further prominence as an Arabo-Syro-Mesopotamian cultural centre, especially in the wake of the fall of the Arabic-speaking kingdoms of the Nabataeans of Petra in A.D. 106 and the Palmyrenes of Tadmur in A.D. 237. Nevertheless, what concerns us from the linguistic point of view is not the historical survey, per se - significant and relevant though it is - but the similarities which hold between the Babylonian verse structure - the earliest Semitic verse form discovered so far, and the earliest world verse form as well - and the ancient Arabic verse structure as illustrated to us by alFarahidiy's system. However, it has yet to be borne in mind that since central Arabia should have provided the sheltered area for the nearest descendant of proto-Semitic, Arabic remains the best foundation to reconstruct proto-Semitic.

Here, it seems best to recall the major characteristics of the Babylonian verse, as explicated by Sir Leonard Woolley (1963,800). Those major characteristics seem to be the following:

- (i) The poem is divided into lines which may be separated into two-half lines.
- (ii) Each line contains a more or less fixed number of stress accents.
- (iii) Each line is a complete sentence.

Comparing the major characteristics of the Babylonian verse with those of Arabic verse, the following characteristics seem to be the common denominators:

- (i) The poem is compounded of a number of lines, each of which is divided into two hemistichs, separated by a medial, silent interval, and terminated by an identical silent interval.
- (ii) Each line contains the same number of stress-initiated feet, which in normal conditions contain more or less the same number of syllables; and whenever divergence arises, the quantities of syllables within the foot are adjusted to maintain isochronicity. For instance, in the hemistich  
 /'ya: habi:bi. 'walla<sup>x</sup>ði. ?ab'da<sup>C</sup>tahu::/  
 the quantities of the final two syllables in the second and third feet have been adjusted; i.e. /ð<sup>x</sup>i:/ has been shortened and /hu/ has been given the length of two medium open syllables.
- (iii) Each line normally constitutes a complete sentence.
- (iv) All lines in the poem lead up to a climactic, termed the "objective line".

Confining ourselves to Arabic verse, three major phenomena are worth noticing:

- (A) The Arabic linguists thought highly of verse as a form of speech (alFarahidiy, MS.,62,216; alMubarrad, ed. Grunnebaum, 1941,374; Ibn-Rashiq, 1955,i,20; Ibn-I?aθir (d.1239), n.d.,IV,6; Ibn-Khaldun, 1958,iii,374) which the Ancient Arab poets, apart from subjective themes, used to record their tribal history to the extent that it was later identified by Ibn-ʿabbas (d.688) as the "archive of the Arabs" (Ibn-Rashiq, 1955,i,30; Ibn-Khaldun quoting Ibn-lʿarabiy (d.1148),ii,402, iii,303,342,367,410), and which the early Arabic linguists considered the unimpeachable reference in their systematization of Arabic linguistic studies and their explication of the linguistic ambiguities of the Koran.  
 (Ibn-ʿabbas, op.cit.)
- (B) Despite the controversies amongst the early Arabic linguists concerning the relative merits of verse and prose, and whether they are syntactic or stylistic,

the fundamental common grounds of agreement amongst all linguists and poeticists remained the unity of human speech.

- (C) One of the fundamental, axiomatic rules of verse appreciation, besides the rigorous observation of the rhythmic patterns was the individual independence of the line in its syntactic and semantic content, which might have arisen from the observation and realization of the parataxis of Arabic (alMubarrad, 372-82; Ibn-<sup>l</sup>ʿaṭir, ii,5; Ibn-ʿabi-lḤadid, 304; Ibn-Khaldun, 358).

At this point, the question which imposes itself is what the Arabic linguists and poeticists took the term, /ʃiʿr/ (verse) for. In actual fact, working on the dimensions of the definition of verse is out of the scope of the present work, though it would be very tempting to embark on the distinctive features of the definition of verse prior to and after the wide diffusion of the Aristotelian definition. Nevertheless, on account of this work, we have ipso facto to confine ourselves to alFarahidiy's definition.

AlFarahidiy (MS. 62,216) defines verse as follows:

"/?aʃʃiʿr/ = verse is a form of speech, equally organized, and periodically demarcated by certain limits that it does not exceed. It is unique to the poet only on the ideational and semantic levels."

However, as far as the above definition is concerned, it seems appropriate to point out that such a definition, though it owes

its rigorous formulation to alFarahidiy, probably has its roots in the etymology of the term /na<sup>x</sup>om/, which literally means organization, but technically, "the stringing of pearls of similar size" (MS. 762; also see Vernier, 1892, 511).

The recognition of verse as a form of speech justifies bringing the study of al<sup>c</sup>arud (the phonological study of Arabic verse structure, "Ibn-<sup>c</sup>abd-rabbih, 1940, vi,369") into Phonetics, since "metrics is entirely within the competence of linguistics" (Lotz, 1960,137) because "under normal conditions the rhythm of poetry is based upon the rhythm of the spoken language" (Miller, 1902,499); Cf. Abercrombie, (1965,16), "to claim prosody as part of my subject, phonetics, because verse is verse as a result of the way certain aspects of the sound, or rather perhaps the sound-producing movements of speech have been exploited or organized".

#### C. ALFARAHIDIY AND THE ARABIC PROSODIC THEORY

By contrast with the obscurities which surround the earliest history of Ancient Arabic verse due to the fact that writing was little practised amongst the desert Arabs, and that for long centuries it was transmitted from mouth to mouth, there is no disputing the fact that the rhythmic patterns manifested in Arabic verse were first successfully analyzed and systematized by

alFarahidiy, whose system and nomenclature have formed the accepted basis of all subsequent investigation, which unfortunately a few generations after his death, as from the period of cultural decadency, became so superficial that misinterpretation formed their distinctive characteristic, due to the lack of understanding of the phonetic implications of the system, because once the phonological backbone of the system is ignored or misinterpreted, nothing can be drawn from it but whimsical complexities.

It has been generally agreed, alike by ancient and modern, Arab and non-Arab scholars, that alFarahidiy is the undisputed systematizer of Arabic verse structure in the science of al<sup>ḥ</sup>arud, which in its overall implications and phonological procedures never meant versification, per se, though verse was its major application. In fact, a parallel between al<sup>ḥ</sup>arud, if associated with his study of the segmental and contextual relations in which the syllable constitutes a corner-stone, and any prosodic approach to Arabic can be safely drawn. That he is "the founder of Arabic metrics" (Blanc, 1975,1269), and that the first and last successful phonologically-based systematization of Arabic verse structure was his brain-child, have never been seriously challenged by any authority on the subject.

On his parentage of the Arabic prosodic system, on which no advances have been made, it would be sufficient to quote Weil (1965,305-306) at length. Weil states:

"Ohne Zweifel ist die Tradition begründet, die das System der arabischen Metrik auf al-Xalil zurückführt. Es wird davon wie von der Erfindung eines komplizierten Mechanismus gesprochen /ʔauwal- man- Xtra<sup>C</sup>a ha:ʕ- lfann/; sicherlich deswegen, weil es ihm geglückt ist, die rhythmischen Gefüge der mannigfachen Silbenfolgen in den alten Versen zu gliedern, ihnen und ihren Teilen Namen zu geben, sie durch graphische Darstellung dem Auge sichtbar zu machen und dadurch gewissermassen zu erklären. AlCaḥiẓ, der i.J.255/869, also nur 80 Jahre nach al-Xalil auch in Baṣra gestorben ist, und dessen Bericht sicherlich auf direkter lokaler Tradition fusst, sagt ausdrücklich, dass al-Xalil neue metrische Begriffe und entsprechende sprachliche Bezeichnungen geschaffen habe, die vor ihm im Arabischen unbekannt gewesen seien, und er stellt ihn daher den Mutakallimūn an die Seite, die auch neue philosophische Begriffe und zugleich die entsprechenden, bis dahin in der arabischen Sprache unbekannten Termini geprägt haben .... habe al-Xalil als erster die verschiedenen Metren unterschieden und analysiert und dafür Termini geschaffen."<sup>1</sup>

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<sup>1</sup> "The tradition which credits alKhalil with the system of Arabic metrics is undoubtedly well-founded. Reference to it is made as though it were to a complicated piece of machinery, /ʔauwal man-Xtarafa ha:ʕa.-lfann/; this is certainly because he successfully segmented the rhythmic patterns in the old verse, gave them and their components names, rendered them perceptible to the eye through graphic representation and concurrently explicated them. AlJahiz, who too died in 255/869 in Basrah, only 80 years after alXalil, and whose report is no doubt based on direct local tradition, states explicitly that alXalil created new metrical concepts and linguistic designations that were unknown in Arabic before him, and ranks him alongside commentators on philosophy and theorists who likewise originated new philosophical concepts and, to go with them, designations which were unknown hitherto in the Arabic language ... It was alXalil who first distinguished and analyzed the different metres and created terms for them.



As we pursue our investigation of alFarahidiy's parentage of the systematization of Arabic verse structure, we find that no European authority suspected that he based his system on phonological considerations. The best representative of this view is found in Freytag (1830). This pioneer orientalist in his work "Arabische Verskunst" gave plausible and scholarly explications which helped illuminate the system. In answer to the question of "Wie erfand man die Gesetze des Versbaues und wer erfand sie?", he remarked:

"Gelehrte Araber sind der Meinung, das Chalil ben-Ahmed alFarahidiy durch die Kenntniss des Tactes und der Melodien, deren Verwandtschaft mit dem Versmasse auch die Araber anerkennen, zu Auffindung der Metra geführt worden sey." <sup>1</sup>

(1830,17)

"Indessen zeigt doch die Eigenthumlichkeit der Bearbeitung, das sie nicht von der Griechen genommen sey, indem sie dann doch in einigen Dingen mit der griechischen Metrik Aehnlichkeit haben würde." <sup>2</sup>

(1830,18)

"Im allegemeinen darf man wohl behaupten, das Chalil ganz seinen Weg betrat, und auf diesem mit grosser Genauigkeit fortging. Auch wendete er die Kenntniss Grammatik auf die Metrik an." <sup>3</sup> .... Das erstere zeigt

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<sup>1</sup> Arab scholars hold the opinion that alKhalil ben Ahmed alFarahidiy was led to his innovation of the metres by his knowledge of the principles of beat and melody whose relationship with verse structure is recognized by the Arabs, as well.

<sup>2</sup> The idiosyncrasy of his approach to the matter, however, manifests that it was not adopted from the Greeks; since had it been so, it should have shown, in certain respects, similarities with Greek metrics.

<sup>3</sup> One may generally claim that alKhalil worked out his independent and accurate approach and proceeded with great precision, applying his grammatical knowledge to metrics ....



sich sogleich in der Bestimmung der Grundbestandtheile des Verses. Wenn er gleich bei diesen wohl an eine Zeitmassung dachte, so bestimmte er sie doch nicht durch Längen und Kürzen; sondern sie bestehn nach seiner Meinung aus ruhenden und bewegten Buchstaben, welche zusammengesetzt wieder Theile bilden, aus denen der Versfuss besteht." <sup>1</sup>

(1830,27)

"Chalil selbst war Dichter und Musiker und ein solcher ist im stande den Rhythmus richtig zu fühlen." <sup>2</sup>

(1830,30)

It has been stated earlier that the syllable constitutes a corner stone in alFarahidiy's system. In effect, the foregoing statement, altogether with the views of the eminent European authorities as well as modern linguists who tried their hands at the subject (Sa'aran, 1951; Halle, 1966) carries with it the corollary of a constructive discussion with Elwell-Sutton (1976), who claims that his account of the traditional system (of Arabic prosody) is

"a resumé of the European works that reproduce the theories of the Oriental scholars without significant change; 'those by Samuel Clarke (1661), Ewald (1825) and Freytag (1830)';

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<sup>1</sup> His independent approach and accuracy immediately strikes us in the way he determined the basic components of the verse. Though he considered temporality relevant to those units, he did not determine them in terms of long and short; they, in his view, rather consist of quiescent and movent letters, which in combination provide units of which (the hierarchy of) the verse-foot consists.

<sup>2</sup> AlKhalil being a poet and a musician was well qualified to feel the rhythm (of Arabic) quite accurately.

and who further asserts that:

"there must however be general agreement that particularly in the failure to isolate and identify the syllable as the unit of speech and therefore of scansion, the prosodic theories of the traditional scholarship fall far short of those of the Greeks in simplicity<sup>1</sup> and clarity, and it is indeed surprising that such a clumsy system should have survived so long";

(pp.vii,viii)

and that "one of the blind spots of Muslim<sup>2</sup> prosodists was their failure ever to isolate the vowel except as a function of the consonant or letter. ... Scansion is based on the written form, and is carried out by the process of counting letters."

(Elwell-Sutton, 1976,3)

It seems not superfluous to say that one of the misconceptions of some writers on the history of linguistics, in

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<sup>1</sup> As for the complexity of the Arabic prosodic system, Freytag (1830,31) notes: "Die Menge von Kunstausdrücken, welche ihre system enthält, erschwert zwar dem Anfänger die Sache etwas; allein wenn die selben gehörig begriffen sind sie vom grössten Nutzen, da durch sie Bestimmtheit und Kürze hervorgebracht werden."

<sup>2</sup> It is an unfortunate by-product of parochial controversies that the term "Muslim" has been used to cover everything important in Arabic linguistic thinking. It is not only irrelevant, simply because there is no language that can be termed as "Muslim" or "Islamic"; albeit a term of limited use in historical socio-linguistics; moreover, apart from being a cover-term, it, within this context, deprives alFarahidiy of his own right. What is more, it deprives non-Muslim linguists and other votaries of their own contributions.

general, and on fields within the scope of Phonetics, derives from their attempts to present their evaluation on analogy of works, performed on other languages by other linguists, forgetting all about the peculiarities of the languages concerned, and what relations exist between the adopted approach and the field-relations between the substances of that form without attempting to espy beyond their pre-reflective judgement of value. And naturally when such an attempt fails, as it is bound to do, an undisciplined approach as such becomes no more than a web of whims and fancies. The notes of linguistic thinking have to be studied in relation to their historical context; and the main concerns of the history of phonetics are the specific concerns of a given language and a given time, and how far the innovations of a phonetician or a school of phonetics could cope with the issues concerned, and in certain cases how far a work or a matrix of works have influenced the development of the subject.

One consequence of Elwell-Sutton's pronouncement on fundamental issues is that one finds it inevitable to scrutinize its phraseology, when it touches on those issues assertedly, but rather suspiciously. Thus, a casual reader might be perplexed by the very recondite idea that while alFarahidiy produced a clumsy system that should never have survived so long, that very clumsy system

"offers a convincing, though hitherto hardly understood, account of the Arabic metres; and it has been equipped

with a complexity of ingenious modifications that it can, by the use of certain latitude, be applied to the analysis of virtually any metrical system that is based on quantity. Indeed, some theorists even tried to apply it to English and French."

(Elwell-Sutton, op.cit.,57)

If the system is "hitherto hardly understood", it is difficult to comprehend how one would make sweeping comments of this kind without any substantial knowledge of Phonetics.

By turning to prove the realization of the Arabic prosodists of the syllable (cf. alFarahidiy's hierarchy, p.85) the notes below would serve in the amplification of that realization.

(i) Looking at the C-V units, the Arabic writing system renders the open short syllable and the closed medium syllable self-evident, while the open medium syllable is potentially identified as neither  $C^V$  or  $C^VC$  .

(ii) The open short syllable is traditionally isolated as /harf-mutaharik/ (consonant+sonant)<sup>1</sup> in contrast with /harf-sa:kin/ (consonant-sonant),<sup>1</sup> whereas the medium syllables are isolated and identified as /sabab--Xafi:f/ (light-cord).<sup>2</sup>

(iii) The abstract, prosodic notation provides the solid evidence that all the peculiarities and particularities of Arabic were well recognized. Therefore, C is represented by (0) which stands for the non-differential time-ratio of  $V$  in the context  $C^VC$ ; and  $C^VC$  and  $CV:$  are represented by 01 where 1 stands for a time-ratio equivalent to 0, that is to say  $C^V = C$ ; and on the supposition that  $0 = 1$ , then  $01 = 2(0)$ .

Freytag (1830,4), concerning the time substratum underlying alFarahidiy's prosodic system, pointed out that:

"Das Zeitmass der einzelnen Füsse ist bestimmt,  
 (a) durch die Anzahl der Sylben, woraus der Fuss besteht, (b) durch die innere Beschaffenheit dieser Sylben, das heisst, ihre Länge und Kürze."<sup>3</sup>

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<sup>1</sup> Mitchell, 1953.

<sup>2</sup> Palmer, 1874,293.

<sup>3</sup> "The time measure of the individual feet is determined by  
 (a) the number of syllables which constitute the foot; and  
 (b) the internal components of these syllables; viz. their long and short quantities.

(iv) Prosodic "segmentation" (Billingsley, 1570, IV, DEF, V.816) is neither based on the written form, nor carried out by the process of counting letters, unless Arabic writing is considered as entirely phonemic, which is not the case, or unless it is intended to mark the syllable, which would be a very unfortunate use of the term because it in fact only indicates one form of the syllable in Arabic.

The obvious and valid objection to such a myth is Elwell-Sutton's statement that:

"It is necessary for the spelling of the line to be adjusted so as to include all letters that are sounded but not written, and to eliminate those that are written but have no phonetic value. In Arabic, the number of such adjustments is comparatively restricted."

(Elwell-Sutton, op.cit.,4)

As a matter of fact, the approximation of the written form to the spoken form, in alFarahidiy's system, is not only catered for by the process of fully pointing the written form but also by a larger process of prosodo-phonematization wherein certain prosodic diacritica are decomposed into their linear phonematic constituents (Ibn-<sup>ʿ</sup>bd-rabbih, 1940, vi,262; Palmer, 1874,293).

(v) If the consonant - perhaps this is the only implication Elwell-Sutton knows about the /harf/ - had been the sole unit in

alFarahidiy's phonetic thinking, the pronouncement on the syllable and the vowel could have been swallowed. But how could we get away from the prosodic hierarchy which he employed in his work? Such a hierarchy confutes any grain of credibility in a pronouncement of this kind.

It is quite possible to understand and give due appreciation to such a hierarchy, which was specifically innovated to cope with a complex of structural and temporal relations, once one dusts away the externals and penetrates through to the core of the system.

#### D. THE SCIENCE OF AL<sup>Ḥ</sup>ARU.D RE-DEFINED

Before succumbing to the natural course of presenting a concise, phonological interpretation of /<sup>Ḥ</sup>ilm-l<sup>Ḥ</sup>aru.d/, i.e. the Science of the Medial Interval, three historical considerations have to be recorded:

(i) The works of the European philologists who worked on the subject are invaluable on account of the difficulties involved in their researches, especially in the absence of alFarahidiy's al<sup>ḥ</sup>aruḍ, which unfortunately has not survived, except in didactic poems from the 10th century onwards. Such a compound complexity rendered their mammoth task fairly impossible primarily because they had to have their pilot in very old manuscripts (cf. Brockelmann, 1898), and had to collect their data from works indirectly related to the subject; and a priori some of their conclusions had to be speculative, though not far from correct. However, it remains to be remarked that due to their marginal phonetic knowledge, they had to overlook the phonetic and phonological background of the system, without which no realistic picture of the system can be obtained.

(ii) On the level of linguistics, as opposed to the philological approach which the Cambridge dons, Professor E.H. Palmer and Professor W. Wright, took over from their French and German counterparts, the renewed interest in the subject which dates back to the early 1940's owes much to the incentive and boost given to it by Professor J.R. Firth and his fellow prosodic-analysts at the Department of Phonetics and Linguistics in the University of London.

(iii) The rediscovery of the phonetic and phonological principles, underlying the system, owes much the same to the English-speaking school of General Phonetics, particularly to



A.M. Bell, A.J. Ellis, H. Sweet, D. Jones, K. Pike and D. Abercrombie, for without the mature age of General Phonetics many a phonetic observation of alFarahidiy's could have remained, veiled.

Having recorded the three points above we now turn to the Science of the Medial Interval. The material included under the rubric of al<sup>ḥ</sup>arud has usually been taken to mean a cluster of the study of Arabic metrics and rhyme (cf. Freytag, 1830; Vernier, 1862; Palmer, 1874; Wright, 1898), both of which were of especial importance to alFarahidiy in their own rights as linguistic phenomena. However, a necessary prelude to any phonological presentation of alFarahidiy's prosodic system is to re-investigate the term in view of his lexicon in the first place, and other early Arabic commentaries, in the second, due to the fact that the term has been given connotations other than those actually intended by its innovator.

Under the heading, /<sup>ḥ</sup>-r-d/, where alFarahidiy discusses the derivatives of the root, he comments:

"/<sup>ḥ</sup>a:radtahu bi-lkita.b/ (is used) when you compare your writing with his. /ʔal-<sup>ḥ</sup>aru:du <sup>ḥ</sup>aru:du-ʃʃi<sup>ḥ</sup>r<sup>1</sup> liʔanna ʃʃi<sup>ḥ</sup>ra yu<sup>ḥ</sup>radu <sup>ḥ</sup>alaih wayuǰma<sup>ḥ</sup>u ʔa<sup>ḥ</sup>a:ri.d wal<sup>ḥ</sup>aru:du fa:silatu-nnisf wal<sup>ḥ</sup>aru:d tuʔannaθu

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<sup>1</sup> Cf. p.63.

watta<sup>ʕ</sup>ki:ru ja:ʔizun./ (MS.72). It is the /<sup>ʕ</sup>aru.d/ of verse because it is the identification-pattern with which verse is compared. The plural is /ʔa<sup>ʕ</sup>a:ri:d/. It is derived from the medial divider (interval).<sup>1</sup> It is feminine, but masculinization is permissible.

The foregoing definition may be further illuminated by his definition of /ʔaʃʃi<sup>ʕ</sup>r/ (MS.430, Ibn-<sup>ʕ</sup>abd-rabbih, 1940,269), where he states that:

"/ʔaʃʃi<sup>ʕ</sup>r/ = Verse is /ʔal-qari.d/ (speech) which is equally organized and periodically demarcated by certain limits that it does not exceed. It has been termed as such because - in it - the poet feels and perceives ideas, not usually perceived by others, and expresses them by special wording."

(re. MS.430,762,639)

Now if we plot out the above lexical observations with the definition, attributed to alFarahidiy that:

"/ʔal-<sup>ʕ</sup>aru.d/ is a systemic science by means of which the measure of the well-formed and the ill-formed line is distinguished";

(Ben Cheneb, 1954,4; ar-Radi., 1975,8)

and with alFarahidiy's statement that he

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<sup>1</sup> Cf. p.82, iii.

"systematized /ʔal baita mina-ʃʃi<sup>ʕ</sup>r/ (the house of verse = the line) on analogy of (the house of hair = the tent) /ʔal baita mina-ʃʃa<sup>ʕ</sup>r/"

(alMarzubaniy, op.cit., 21);

it is quite feasible to reconstruct the definition of al<sup>ʕ</sup>aru.d as follows:

*Al-ʕaru.d is the science of the patterns of identification by means of which the measure of the well-formed and ill-formed **lines** of an equally-organized and periodically-demarcated form of speech, which is unique to the poet only on the ideational and semantic levels, is distinguished.*

*Etymologically speaking, the term, as a technical one, is derived from the medial interval on analogy of the central post of the tent. Likewise, all the nomenclature for the hierarchic, prosodic constituents were instituted on analogy of the constituents of the tent. Thus, /bait/ (tent = line); /misra.<sup>ʕ</sup>/ (= one of the two flaps that form the folding door = hemistich); and each hemistich consists of feet, called /ʔaʒza.ʔ/ (portions) when spoken of as integral parts of a line, also called /tafa:<sup>ʕ</sup>i.l/ (mnemonics derived from the archetypal paradigm /f-<sup>ʕ</sup>-l/, which act as memoriae technicae, and which are used in their graphic forms as units on the circumference of the generative circles); but when spoken of as rhythmical units, they are called /fawa:ʕil/ (= separate (intervals) = bars). Concurrently, the nomenclature of the lower constituents of the separates (= feet) is pursued:*

*the /watad/ (= a tent-peg) stands for a rhythmically generative sub-unit which acts as one generative, integral constituent on the circumference of the circles, despite the likelihood of interpreting it as two sub-units in a position, other than foot-initial; and the /sabab/ (a tent-cord) stands for CV: , C<sup>v</sup>C , C<sup>v</sup>C<sup>v</sup> ; so termed on account of its variability and flexibility. (Ibn-ʿabd-rabbih, 1940, vi,263) The decomposition of the prosodic constituents reaches its ultimate in the terms for the phonematic unit /karf/ (a divertent), and /karakah/ (a transitional element which provides the joining of phonematic units).*

In substantiating the relationship which holds between Phonetics and al<sup>ʿ</sup>aru.d, as defined in the reconstruction above, it seems best to re-emphasize the milestones which catch the eye of any phonetician:

- (i) Verse is a periodically-demarcated form of speech.
- (ii) Verse is equally organized.
- (iii) Verse is unique to the poet only on the ideational and semantic levels.
- (iv) Al<sup>ʿ</sup>aru.d is the science of the pattern of identification (i.e. an abstract system) by means of which the structure of the measure (rhythm) of Arabic speech, as applied to the articulation of verse, is determined.
- (v) The term is derived from the medial interval (i.e. the silent element) which terminates the first hemistich and initiates the second one; and which is as important to verse structure as any other element, or else it would not have been used as a rubric for the whole system.

In this respect it is significant to remark that all writers on the subject, as far as I am aware, interpret the term as the last foot of the first hemistich; and accordingly interpret the term, /darb/ (= the identical) as the last foot of the second hemistich. Nevertheless, although we argue from the same evidence - the etymology of *ālḥaru.d* - the conventional approach is incompatible with alFarahidiy's elucidation (MS.,72,369). Furthermore, the *darb* is not necessarily identical with the last foot of the first hemistich. What is identical is the silent element, which terminates each hemistich.

- (vi) The hierarchy of the system, on the theoretical level, starts with "the foot" (Abercrombie, 1965,22) as a constituent, more or less durationally equal to all other feet within the rhythmic pattern boundaries, down to the phonematic constituents and transitionals, whose contextual relations are governed by certain phonological, structural and temporal, relation-restricting rules. But, on the practical level, it starts with the phonematic units and transitionals up to the line.

On account of the preceding points associated with alFarahidiy's observations (cf. pp.xlii ; for velarization and palatalization; see El-Sa'aran, 1951) on what is termed in Prosodic Analysis terminology as prosodies of the syllable-parts and syllable prosodies (Henderson, 1949), one wonders how applicable to Arabic phonology the prosodic analysis is, and how affiliated alFarahidiy's prosodic approach and Prosodic Analysis are.

## E. PROCEDURAL EXPOSITION

In setting out to explain how alFarahidiy generated the actualized and potential /buku.r/ (sing. /bahr/ = space (MS.241; Palmer, 1874,292), we shall first seek to divide the exposition into

- (E.1) segmentational procedures; and
- (E.2) the generative circles.

### E.1 Segmentational Procedures

Beginning from the postulate that the output of the Arabic writing system, in the phonemic respect, is inappropriate to constitute the direct input to phonological representation, although it is quite appropriate for prosodic analysis, alFarahidiy, whose approach came to be applied later to the study of Persian, Turkish, Urdu, Hausa, and medieval Hebrew, improvised a triphased, procedural process to remedy this problem. The procedural process is carried out by the following phases:

(i) The decodification of the Arabic writing system into a sort of prosodico-phonemic transcription, in which certain prosodic diacritica are decomposed into their linear constituents, and the transitional, synthetic prosodies retain their supralinear and infralinear positions.

(ii) The recodification of the decodificatory transcription into an abstract, twofold (durational and structural) and

two-elemental (0, 1) notation. Hence, (0) stands for (C<sup>V</sup>), and (01) for C<sup>V</sup>C or CV: (cf. 10th Century, Ibn-ʿabd-rabbih's, ed., 1940, vi,277).

(iii) The recompilation of the recodified notation into upper degree compounds, systemically measured by combinations of the eight memoriae technicae and their rectified forms, and rhythmically measured by /fawa:sil/, which in Arabian music stand for bars, marked by initiatory beats, and equated with the eight memoriae technicae, (Cf. pp.88).

In this concern it is noteworthy that the Arabic term for rhythm, that is /ʔi:qa.ʕ/ (beats, MS.140), is defined in an anonymous manuscript, translated by E. Smith (JAOS, 1844), as:

"a collection of beats, separated by times of definite length, according to certain proportions and places, and appropriated to equal strains, whose equality is judged by correct and delicate taste."

(p.197)

The above triphased, procedural process can be brought home to us by an illustration. Let us take a line by /ʔibn-suhail/ in Arabic writing and rewrite it in the Roman alphabet:

AN ILLUSTRATION OF AL-FARAHIDIY'S  
TRIPHASED PROCEDURAL PROCESS

A. SCRIPT DEVOID OF DIACRITICS:

hajt fxl't alzh'r kafur bha      whsbt fiha altrb msk aḍfr

B. DECODIFICATION:

B.1. SHAKLIFICATION (DIACRITIZATION): (Cf. p. 232)

hajt fxl't alzh'r kafu an bha      whsbt<sup>u</sup> fiha altrb<sup>a</sup> msk<sup>an</sup> ṭaḍfr<sup>aa</sup>

B.2. /faru.ə/-WRITING (PROSODO-PHONEMATIZATION):

hajt fxl' tẓẓhrka furnḥa      whsbtḥi ḥtẓẓhrḥs. khḥḥra

C. PROSODIAL WRITING: (cf. p. xxix)

0101001 0101001 0101001      0001001 0101001 0101001

D. RHYTHMIC SEGMENTATION AND PATTERN-IDENTIFICATION:

hajt fxl'	u <sup>a</sup> p <sup>a</sup> a <sup>a</sup>	tẓẓhrka	furnḥa	aa <sup>a</sup> u <sup>a</sup> a <sup>a</sup>	whsbtḥi	ḥttrbḥs	knḥḥfra
0101001	0101001	0101001	0101001	0001001	0101001	0101001	0101001
u <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln	ua <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln	u <sup>u</sup> mṭfafln
i	i	i	i	i	i	i	i

TRANSLATION: (In the breeze) It stirred, and I felt the flowers became camphor and the soil became fragrant musk.



## E.2 The Generative Circles

The purpose of this section is to introduce how alFarahidiy systematized the Arabic rhythmic patterns and to record the fact that the modern Generative approach is by no means unique; or as Chomsky puts it:

"The idea that a language is based on a system of rules determining the interpretation of its infinitely many sentences is by no means novel."

(1965, v)

In actual fact, the generative approach was practised by alFarahidiy - not to mention Panini, whose generative approach Chomsky admits - in his rhythmic methodology, which he primarily based on five mathematico-logical principles, i.e.

- (i) equivalence,
- (ii) substitution,
- (iii) reversibility,
- (iv) potentiality, and
- (v) actualization.

This fact may become clear to any phonetician or linguist by a revision of his lexicographical approach (pp.28-35) and his grammatical approach, as well as by proceeding through this section.

What characterizes alFarahidiy's approach in this respect is that, unlike the modern Generative phonologists, it is not segmental. On the contrary, it is based on a contextual-phonological, structural and durational hierarchy which comprises the following:

---

A.	C or (V)		/sa:kɪn/, = C-TP.
B.	C <sup>V</sup>	=0	/mutakarrɪk/, = C+TP.
C.	C <sup>V</sup> C=CV=C <sup>V</sup> C <sup>V</sup>	=0I=00	/sabab/ (cord) CD.
D.	C <sup>V</sup> CV=C <sup>V</sup> C <sup>V</sup> C	=00I	
	CVC <sup>V</sup> =C <sup>V</sup> C <sup>V</sup> C	=0I0	/watad/ (peg), PG.
E.	N L I(PG.)+I(CD.) ,N M I(PG.)+2(CD.)		/fa:ʕɪlah/ (separate = foot), SP.
F.	N L 2(SP.) N M 4(SP)		/misra.ʕ/ (flap = hemistich), FP.
G.	N M 2(FP) DVD I(STE)		/bait/ (house = line), BT.

---

CONVENTIONS:

TP	: transitional prosody
N	: no
M	: more
L	: less
DVD	: divided
STE	: silent element
'	: generating sign

Illus. 8. AlFarahidiy's prosodic hierarchy, tabulated

In view of Rule E.<sup>1</sup> alFarahidiy, a naturally born phonetician with a timing-conscious ear that enabled him to define the tuning of musical instruments (Haywood, 1978, 24), generated four mnemonics, which traditionally came to be known as the root-mnemonics. From those mnemonics he generated four other mnemonics by the application of the principle of reversibility of CD's and PG's; thus bringing the number of mnemonics to eight. In generating those mnemonics, he had eight units which he terms as fawa:sil, that is, measures of bars. In order to make the generation of mnemonics clear the following illustration may be helpful:

ROOT MNEMONIC GENERATIVE		GENERATED MNEMONIC BY REVERSIBILITY		NEW MNEMONIC	
PG.	CD.	CD.	PG.	CD.	PG.
OOI	OI	OI	OOI	OI	OOI
$C^V CV : C^V C$		$C^V C C^V CV :$		$CV : C^V C^V C$	
$f^a \underset{f}{i} u l^u n$		$l^u n f^a \underset{f}{i} u$		$fa \underset{f}{i} l^u n$	

Illus. 9. The generation of mnemonics

<sup>1</sup> See p.85.

Prior to the introduction of the generative circles,<sup>1</sup> it is necessary to recall that alFarahidiy invented a number of terms (Weil, 1954,306) by means of which Arabic verse is treated as a set of structurally hierarchic constituents, which start with the /harf-- sa:kin/ (C-harakah) and the /harakah/ (lit. movement, techn. see pp.xxii, 244 ), and end with the line. In alFarahidiy's terminology, /harf-- mutaharrik/, i.e. C+harakah, refers to a C, or a V functioning as C<sup>2</sup> +harakah (this is what I have interpreted as a transitional prosody or a prosody of synthesis symbolized as a raised <sup>V</sup> . The term, /sabab-- Xafi.f/ (lit. light cord), is assigned to a structural constituent which consists of a /mutaharrik/ + /sa:kin/, i.e. C<sup>V</sup>C, or a /sa:kin/ + /sa:kin/, i.e. CV (the second sakin must be a V-unit), /sabab--θaqi.l/ (lit. heavy cord) denotes two successive mutaharrik's, i.e. C<sup>V</sup>C<sup>V</sup>. A mutaharrik + sabab-- Xafi.f, i.e. C<sup>V</sup>C<sup>V</sup>C or C<sup>V</sup>CV, form a coherent and indivisible constituent around the circumference of the circle called /watad-- majmu'f./ (lit. collected peg), whilst a mutaharrik + sabab-- θaqi.l, i.e. C<sup>V</sup>C<sup>V</sup>C<sup>V</sup>, form another constituent termed /watad-- mafru.q/ (lit. separated, or two-forked peg). (Cf. p.85).

As we have mentioned, the two kinds of /ʔasba:b/ (sing. sabab) and /ʔawta:d/ (sing. watad) combine together in

<sup>1</sup> For a generative view of the circles see Halle, 1966.

<sup>2</sup> In alFarahidiy's system of diacritics the phonological function of a V-unit is indicated by pointing. Thus, />/ represents /u:/, and />/ represents /i:/, but when pointed they represent /w/ and /y/, respectively.

various numbers and arrangements to compose eight rhythmic paradigms, four of which are generated by reversibility and equivalence (cf. p.86 ). The rhythmic paradigms are:

/fa<sup>C</sup>u:lun/, PG CD  
 /fa:<sup>C</sup>ilun/, CD PG  
 /mafa:<sup>C</sup>i:lun/, PG CD CD  
 /fa:<sup>C</sup>ila:tun/, CD PG CD  
 /mustaf<sup>C</sup>ilun/, CD CD PG  
 /maf<sup>C</sup>u:latu/, CD CD PG  
 /mufa:<sup>C</sup>alatun/, PG CD CD , and  
 /mutafa:<sup>C</sup>ilun . CD CD PG

However, the ?asba.b and ?awta.d do not combine freely; they are subject to the rule which states that a foot (cf. p.85, Rule G) should contain no less than one sabab + one watad (unless in a line's final position), and no more than one watad + two sabab's which are by rule equated with one watad.<sup>1</sup>

The above rhythmic paradigms not only act as memoriae technicae; they also give quantitative representation of the structural constituents, since short and long quantities are recognizable in the Arabic script when fully pointed from the fact that a short quantity is expressed by mutaharrik, (C<sup>V</sup>), [i.e. a

---

<sup>1</sup> For the constituents see Palmer, 1874 (291-376); Freytag, 1830, 62-67; Weil, 1954, 306-7; Ibn-Cabd- rabbih, 1940, v, 425; azZamakhshariy, 1969, 59; AshShantariniy, 1968, 13-14; AtTabriziy, 1970, 28-9.

linear phonematic unit + a prosody of synthesis] and represented in notation as (0) around the circumference of the generative circle; and a long quantity is expressed by sabab-- Xafi.f (i.e. C<sup>V</sup>C or CV) represented in notation as (01).

The circle-theory is based on the hypothesis that each circle represents an ideal<sup>1</sup> metrical pattern for a single verse, covering not only the number of feet in each hemistich but also the quantity and number of the syllables they contain. Different circles represent combinations of different paradigms. The generation of rhythmic patterns from the ideal metrical pattern starts with the decomposition of each foot into its immediately lower constituents, i.e. sabab and watad, which are delimited in the system by . in the middle of 0 which indicates the start of a possible entry to a rhythmic pattern. The generation of the various possible rhythmic patterns is carried out by shifting the /|/ in a cyclical permutation method so that once the bar-indicator or segmentation marker has been shifted, leaving a sabab or a watad out, it entails changes in the structure of the other feet around the circle. That is, if the segmentation bar is shifted from before the first constituent and placed before the immediately following constituent, all other segmentation bars are shifted and placed before the following constituent, and so on. To put it another way, if we have a sequence of

---

<sup>1</sup> For the deviations from the ideal forms see Palmer, 1874; (op.cit.), also see Freytag, 1830,84-91.

PGCD -feet (PG stands for Peg (watad) and CD stands for Cord (sabab)), which is the case in the Generative Circle 2; and if we transfer that sequence, for type-setting reasons, on to a straight line, we obtain the following:

|PG€D |PG€D|PG€D |PG€D |PG€D |PG€D |PG€D |PG€D

Now if we carry on with the generation process by shifting the segmentation bar from before PG to before CD, we obtain

|CDPG |CDPG|CDPG |CDPG |CDPG |CDPG |CDPG |CDPG

In fact, the second rhythmic pattern is the last possible one as far as this generative circle is concerned, because if we start again, we re-generate the first pattern, above, which stands for the entry to the circle.

This method of generation applies to all circles. By the process of shifting the segmentation-bar around the circumferences of the five circles, it is possible to generate 22 rhythmic patterns, of which only 16 are actualized.<sup>1</sup>

So far we have discussed how the rhythmic patterns around the circumference of the generative circles are generated. It remains to comment on the actualizations of the performed patterns in Arabic.

---

<sup>1</sup> For a detailed study of the circles see ArRadi, 1975; alMakhzumi, 1972,95-112; alKatib, 1971.

It has to be remarked that the ideal forms of the performed rhythmic patterns are not always actualized as they appear around the circumference of the circles. It is not the case that the number of feet, or the hemistich final foot, or the syllable-quantities within the foot-boundaries always occur as set up in their ideal forms. For instance, if we write two actual verses from two different rhythmic patterns which are generated by one generative circle, the quantities of the syllables do not necessarily correspond entirely with those of the syllables around the circle. A divergence of this kind, ipso facto, results in differences in the quantities of the feet within the verse-boundaries.

It follows from this that a set of rectificatory rules had to be introduced. In fact, this was the solution introduced by alFarahidiy in his rectificatory rules to cope with the 34 deviations from the ideal forms. The deviations were classified under two headings: (a) /<sup>C</sup>ilal/ (lit. non-stabilities), and (b) /ziha:fa.t/ (lit. sliders). The first class of deviations may be said to be constitutive; i.e. they occur in the ictus<sup>1</sup> of the first foot or the remiss of the final foot. For example, in a rhythmic pattern made up ideally of eight fa:<sup>C</sup>ilun's, the final foot may be actualized as fa: . These deviations, therefore, relate to the general structure of the actual verse, and accordingly must be maintained all through the poem. Contrariwise, the second

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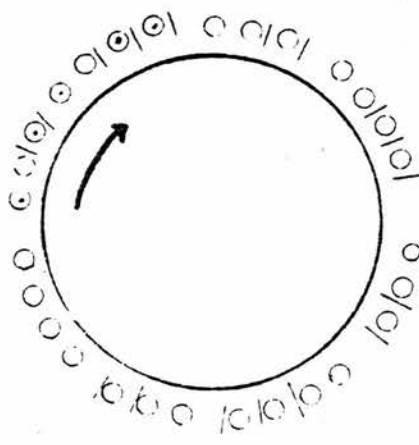
<sup>1</sup> For a view of the ictus in Arabic verse structure see Weil, 1954,312.



class of deviations are occasional changes in the quantities of the syllables within the foot-boundaries. Altogether, 34 deviations were introduced, and each had its own term and explanation. We need not discuss those deviations because we are here concerned with the general analysis of the system and its basic structure.







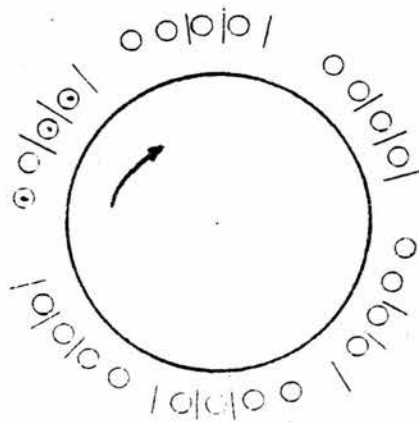
\*On account of the definition of /ʔalʔaru:d/, and the practice of Arabic poets as well as people reciting verse, isochronicity is maintained by the addition of a length-ratio, equal to the missing syllable, which suggests that something essential has been missed by the traditionalists. The syllabic addition follows the following rule:

0 OI OI > 0#2(OI) OI  
 OI O OI > #2(OI) O OI

1. O OI OI O OI OI OI O OI OI O OI OI OI OI OI OI OI  
 f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n  
 2. OI O OI OI O OI OI OI O OI OI O OI OI O OI OI O OI  
 fa<sup>i</sup>la<sup>u</sup> t<sup>n</sup> fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n  
 3. O OI OI OI O OI OI O OI OI O OI OI O OI OI O OI OI OI OI OI OI OI OI  
 mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n mfa<sup>i</sup>l<sup>u</sup> n f<sup>a</sup>ul<sup>u</sup> n  
 4. OI OI O OI OI O OI OI O OI OI O OI OI O OI OI O OI OI O OI OI OI OI OI OI OI  
 m<sup>u</sup>staf<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n m<sup>u</sup>staf<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n m<sup>u</sup>staf<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n m<sup>u</sup>staf<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n  
 5. OI O OI OI O OI OI O OI OI O OI OI O OI OI O OI OI O OI OI O OI OI OI OI OI OI  
 fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n fa<sup>i</sup>l<sup>u</sup> n fa<sup>i</sup>lat<sup>u</sup> n

EEOLLARY: POTENTIALITY: 5 RP's PERFORMED: 3 RP's: 1, 2, 4.

Illus. 12. Generative circle III.

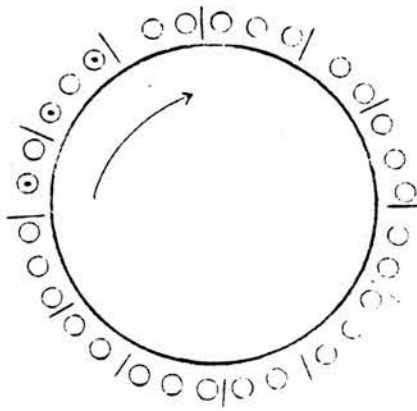


1. 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1  
m<sup>a</sup> f a i l l n m<sup>a</sup> f a i l l n m<sup>a</sup> f a i l l n m<sup>a</sup> f a i l l n  
2. 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1  
m<sup>u</sup> s t f l l n m<sup>u</sup> s t f l l n m<sup>u</sup> s t f l l n m<sup>u</sup> s t f l l n  
3. 0 1 0 0 1 0 1 0 1 0 0 1 0 1 0 0 1 0 1 0 0 1 0 1  
f a i l a t<sup>u</sup> n f a i l a t<sup>u</sup> n f a i l a t<sup>u</sup> n f a i l a t<sup>u</sup> n

COROLLARY

POTENTIALITY: 3 RP's  
PERFORMED : 3 RP's

Illus. 13. Generative circle IV.



1. 0 0 I 0 0 0 I 0 0 I 0 0 0 I 0 0 I 0 0 0 I 0 0 I 0 0 0 I  
u f a l t n u f a l t n u f a l t n u f a l t n u f a l t n  
m f a l t n u f a l t n m f a l t n m f a l t n m f a l t n  
2. 0 0 0 I 0 0 I 0 0 0 I 0 0 0 I 0 0 I 0 0 I 0 0 I 0 0 I  
u a f l n u a f l n u a f l n u a f l n u a f l n  
m t f a l n m t f a l n m t f a l n m t f a l n m t f a l n  
3. 0 I 0 0 I 0 0 I 0 0 I 0 0 I 0 0 I 0 0 I 0 0 I 0 0 I  
f a l t k f a l t k f a l t k f a l t k f a l t k f a l t k  
f a l t k f a l t k f a l t k f a l t k f a l t k f a l t k

COROLLARY:  
 POTENTIALITY: 3 RP's  
 RP's PERFORMED: 2, i.e. I, 2.

Illus. 14. Generative circle V.

## F. DISCUSSION

Whilst certain aspects of alFarahidiy's legacy had to be introduced in a sense rough and ready as they had been originally given due to the fact that they stand for descriptions of segments in the middle of change, it is far otherwise with his prosodic approach. It is discussed here in a method which combines the historical with the analytical in view of the Firthian postulate that in the historical development of languages, prosodic features tend to be dominant and survive changes in the segmental and phonematic constituents (Firth, 1948,152). The relevance of this postulate to Arabic can be well demonstrated by the historical development which under the influence of certain socio-linguistic factors entailed the substitution of certain phonematic constituents by others in certain environments in Arabic dialects. Thus:

{	/θ/	→	/s/ or /t/ or /s/
	/ð/	→	/z/ or /d/
	/q/	→	/ʔ/ in Damacene and Cairene
	/d/	→	/z/ in Palestinian (N) and illiterate Damacene
	/d/	→	/ð/ in Baghdadese
	/q/	→	/dz/ in Najd
	/k/	→	/ts/ (f.) in Najd
{	/j/	→	/y/
	/q/	→	/j/ in Kuwaiti
	/m/	→	/ʔ/+Ṽ in North Western Syrian
	/q/	→	/g/ in Bedouin Syrian.

While, despite the historical deletion of the first two elements of a glottal stop-initiated, piece-initial  $C^VC$  in Damacene Standard Arabic in contrast with, say, Najd Standard Arabic where the first two elements are still preserved, the syllable quantity is still maintained by the process of doubling the length of the rudiment syllabic.

So far as alFarahidiy's phonetic legacy is concerned, it has to be re-affirmed that the syllable constitutes the cornerstone in his prosodic system; so much so that it can be safely claimed, in the light of the segmental procedures (E.I.81), that he consciously restricted the phonemic approach to its legitimate domain. That is to say, he confined it to "the representation of a language in terms of its phonic material by means of discrete and consecutive letters or symbols" (Robins, 1957b,3); and in the meantime maintained the entity of the transitional prosodies as synthetic elements which provide the joining up of the phonematic units, and likewise maintained the entity of the syllable by his prosodic transcription and notation, and the manifestation of the syntagmatic relations within the syllable boundaries.

#### F.I Theoretical Background

It is necessary, before proceeding any further in our discussion, to make clear the theoretical background of the present study and to emphasize that the primary conviction all through the



work is the belief that the syllable is the minimal possible natural unit of segmentation, rather than the characterization of the phonology of a given language by arbitrary segments, albeit for descriptive purposes quite an invaluable procedure.

The phonetic approach, which is adopted in the present work, has two primary aims:

Firstly, the validation of alFarahidiy's approach as a pioneer prosodic one, wherein a set of paradigmatic and syntagmatic relations are well catered for by the following procedural complex:

- (a) Synthetico-analytical units: Phonematic units; Transitional prosodies.
- (b) Phonematic units: Contextually-stable units, and Contextually unstable units, categorized in an hierarchical order into zones (glotto-pharyngeal, and non-glotto-pharyngeal sub-categorized into buccal and labial units), and sub-zones according to places of articulation and degrees of stricture, ranging from complete closure in the case of stops and nasals to most open approximation in the cases of /h/ and the air-stream articulations (V-units) which originate in the transitional prosodies (the rounded, the open, the break "close"). Furthermore, all units have been divided into ± chest voice and sonority (cf. pp.x1-x11).
- (c) Prosodies of syllable parts: Velarization, Palatalization, Dialectal complementary distributional nasalization (cf.p.xxx).
- (d) Syllable prosodies: Velarization, Palatalization, Dialectal complementary distributional nasalization, Length.
- (e) The foot.

It is noteworthy that in alFarahidiy's prosodic system there is no place for such entity as the word in the continuum of

speech, although it is treated in detail as a lexicographical constituent in isolation. (For isolation and continuum, see Area 3, p.242.)

It is also worth noting that C- and V- harmonization did not escape the observation of alFarahidiy. Thus, he remarks that,

"/t/ is changed into /ṭ/ (in the context ~~ṭ~~t) due to the fact that /ṭ/ is one of the velum- /fiXa.m/ (mufaXXamah/, cf. Jakobson, 1957) whose place of articulation is close to that of /t/. Hence, the latter is usually changed (in a context like /ṭa?artu ṭi?ran/ = I have raised the drawbridge) into the former for economy and so as not to change the place of articulation. And likewise is the case with /s/, /ṣ/, and /ḍ/, because they are /fiXa.m/, as well."

(MS.,763)

"The /ʔalif-lmufaXXamah/, i.e. /a:/ is an /u:/-like-/a:/."

(MS.,370)

Secondly, it is meant to give additional impetus to the view that the syllable, and only the syllable, constitutes the first, natural, lower degree entry to phonological synthesis and phonological segmentation. In the way to actualizing those purposes, the views on the syllable are briefly surveyed. And in thus emphasizing the legitimacy of the physio-phonetic syllable

within the framework of general phonetic rhythmicity, the ground is prepared for a well-founded realization of alFarahidiy's prosodic hierarchy. The hypothesis behind the pages that follow is that certain metrical constituents used by alFarahidiy which appear from their segmental structure to consist of more than one traditional syllable may be in fact interpretable as a single syllable in the Stetsonian sense.

F.I.A.      The Syllable<sup>1</sup>

It has been long recognized by linguists of all schools that the syllable, despite its intuitive recognizability, constitutes the most crucial problem in linguistics, because although it may seem quite easy to give an account of the number of syllables a given word contains, it is quite a completely different case to define the syllable and to theorize its production and manifestations. And, a priori, many controversies have concentrated on it. A review of the studies by Rosetti (1959) or Hála (1961) provides a summary of the views on the subject. Nevertheless, the fundamental difference between the views and theories which have so far been put forward lies in the opposition between the phonetically-based and phonologically-based approaches.

Representatives of the phonologically-based approach may be found in Hjelmslev's definition (1938,266):

"A syllable is a chain of expression including one and only one accent";

and in O'Connor and Trim's definition:

"a minimal pattern of phoneme combination with a vowel unit as nucleus, preceded and followed by a consonant

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<sup>1</sup> Cf. Stetson, 1928,11-21; also Allen, 1973,27-45.

unit or permitted consonant combination."

(O'Connor and Trim, 1953,122)

The theories which fall under the rubric of the phonemically-based approach are of sufficient diversity to merit a dissertation to themselves. However, major amongst the phonetically-based theories concerning the syllable, are the following:

(I) The Respiratory (Impulse) Theory:

In the respiratory impulse theory (cf. Jespersen, 1913,190, Scripture and Panconcelli-Calzia, 1955,81)<sup>1</sup>, the syllable is defined in such terms as a sound group produced with a single respiratory impulse.

(II) The Acoustic (Schallfülle) Theory:

This is a theory which explains the syllable in terms of sudden diminution of intensity (Sievers, 1901,203,209,225; Passy, 1922,41; Jones, 1950,54), or, as Stetson puts it,

"the syllable is a group of sounds separated from others by a sudden diminution of intensity - a diminution caused either by a decrease of the breath pressure, or by the presence of a sound of less sonority between two of greater sonority."

(Stetson, 1928,14,  
quoting Passy, 1922,4)

---

<sup>1</sup> cf. Malmberg, 1955.

(III) The Articulatory (Aperture) Theory:

The syllable in the aperture theory is considered as consisting of a sound or a sequence of sounds of increasing aperture (explosion) followed by a sound or group of sounds of decreasing aperture (de Saussure, 1960,51ff).

(IV) The Motor Theory:

In the motor theory, Stetson, to whom the theory owes a great deal, explains the syllable in terms of the pulmonic air-stream mechanism, or rather, to quote Abercrombie (1967,35):

"The syllable is essentially a movement of the speech organs, and not characteristic of the sound of speech, though in any given language the sound will contain clues, of the most varied kind, to the occurrence of the syllable-producing movement."

F.I.A.i. On the Stetsonian Pathway:

The theory we adopt in the present thesis follows the Stetsonian approach to the syllable, not because it has an absolute degree of substantiability, but because in this theory one can perhaps sustain the hypothesis on p.102.

Following, more or less, a Stetsonian line, Abercrombie (1964,5-13), in a succinct and lucid paper, explained the syllable-producing process, as follows:

"The (air-stream) flow is 'pulse-like': there is a continuous and rapid fluctuation in the air-pressure, which results from alternative contractions and relaxations of the breathing muscles. Each muscular contraction, and consequent rise in air-pressure, is a chest-pulse (so called because it is the intercostal muscles in the chest that are responsible); and each chest-pulse constitutes a syllable. This syllable-producing process, the system of chest-pulses, is the basis of human speech."

It will be remembered that Stetson (1928) qualifies the syllable in the following terms:

- (i) A syllable is always a separate event in the speech series. (p.20)
- (ii) The fundamental unit for phonetic analysis is the movement of the syllable. (p.21)
- (iii) Speech is not a series of sounds produced by certain movements. Rather speech is a series of movements made audible by certain sounds and silences which these movements produce. (p.20)
- (iv) In the individuality of the syllable the sound is secondary.
- (v) The delimitation of the syllable is not due to "a point of minimum sonority" but to the conditions which define a movement as one movement.
- (vi) The stroke of the muscles of expiration is accompanied by an articulatory movement for the vowel. (p.29)

The indivisible correlation between respiration and speech presupposes the scrutiny of the rhythm of human speech within the nucleus of respiratory rhythmicity. Nevertheless,

since rhythmicality is in the main a muscular property, scrutiny should ipso facto begin on the neuromuscular level.

Generally speaking, all rhythmic behaviours, including the rhythm of speech which originates in the periodic alternation of the syllable and stress-producing processes which in combination constitute the pulmonic air-stream mechanism, are neuromuscular in their fundamentals. Similar to all other rhythmic behaviours, the rhythmic output is performed by a complex of processes in which the analytical portions of the brain control the motor activities by a tri-phased sequence:

- (a) Origin of the motor activity to be performed.
- (b) Determination of the sequential movements to perform the overall task.
- (c) Control of the muscular movements in the form of graded and integrated sequence on the excitatory level.

And on account of those graded and integrated phases in the overall manoeuvre, it is supposed that once the interpretative area of the brain has determined the outline of activities and the timing-scale of the operational process for the motoneurones to perform, the actual sequence of movements on the operational chess-board is carried on by the somatic association areas, whence signals are transmitted to the central control system (von Euler, 1966,505-515).

In the aural medium which is, strictly speaking, reliant on the utilization of the pulmonic air-stream mechanism in a way



specific to a given language, performed by accurate synchronization between the respiratory muscles which produce the syllable movements on which articulation is superimposed, on the one hand, and the laryngeal muscles and the active and passive articulators, on the other, rhythmicality is a co-ordinate neuromuscular process which is based on a respiratory hierarchy that comprises the following constituents:

(i) The neurologically predetermined periodic discharge - by recruitment-order (Henneman, et al., 1965,565; Henneman and Olson, 1965,591) - of fast motoneurones, separated by the discharge of intermediate and slow motoneurones (Wuerker, et al., 1965,95); where the fast motoneurone activated motor units - because they fatigue very quickly - are suited for situations in which power and speed of contraction are essential. The discharge of fast and slow motoneurones activates two types of motor units, which provide the basis for two varieties of syllables, i.e. stressed and unstressed, respectively.

(ii) A combination of the first lower units to formulate the first upper degree unit, i.e. the foot, which is phonetically demarcated in stress-timed languages (Pike, 1946; Abercrombie, 1964,1965) by the periodic recurrence of an initial, salient or silent stressed physiological syllable "up to, but not including, the next stressed syllable" (Thomson, 1923; Classe, 1952). In the syllable-timed languages there is isochronous recurrence of chest pulses. This same unit is neurologically demarcated by the



isochronous discharge of fast motoneurones in the first type of languages; while in the second type it is demarcated by the exploitation of the isochronous discharge of slow motoneurones. And within this context, the articulation of speech is a series of physio-physical events superimposed on the output of the respiratory movement in synchronatory collaboration between the respiratory areas and the speech area of the brain.

(iii) A complex of the first uppers to constitute the second highest upper, i.e. the clause (Halliday, 1970,3).

To recapitulate, the rhythm of human speech, neurophysiologically-speaking, originates in the exploitation of the periodic recurrence of one sort or another of motoneurones, which activate two distinct types of motor-units (Andersen and Sears, 1964,119-151; Buller, et al., 1960,417-439; Bigland and Lippold, 1954,322-335; Kugelborg and Skoglund, 1946,399-412), thus providing the bases for stress-pulses and chest-pulses, the coordination and succession of which determine the rhythmic characteristics of languages.

Within this perspective of the physio-phonetic syllable a stressed syllable does not differ from an unstressed syllable in the formulary phases.<sup>1</sup> Both types are superimposed on the output of a muscular movement, which in the absence of any superimposition produces a continuum of inaudible vocoids. Nevertheless, the line

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<sup>1</sup> Cf. p.106.

of distinction between the two types lies in the nature of innervation, which either results in a fast motoneurone-activated, audible or inaudible twitch, or in a slow motoneurone-activated twitch. It follows from this that stress neither depends on the nature of phonation in the glottal zone, nor does it depend on any other configurations that contribute to the intelligible and distinctive characteristics of the speech sound or the group of speech sounds superimposed on the output of the twitch. Rather it is based on the neuromuscular process which produces an explosive power contraction, in which the muscular twitch involves maximal, spatial (= multiple motor unit) summation, and maximal, temporal (= wave) summation. (For the terms, multiple and wave, see Guyton, 1977,131.)

The concept of the neuromuscularly-based stress-pulse and chest-pulse brings us to the relevant concept of silent stress (Jones, 1932,227; Abercrombie, 1965,20-22). Mention has already been made of this phenomenon in relation to the formation of the first upper degree unit, i.e. the foot. However, it is interesting, as a brief digression, to remark that the phenomenon of the silent stress might be claimed to be a general phonetic one on the grounds of the evidence that it is not English specific only; parallels to it and substantiative instances may be found in Arabic, especially in what the early Arabic linguists termed as "linguistic enigmatics";<sup>1</sup>

<sup>1</sup> The invention of the /muCamma./ [Linguistic Enigmatics] is attributed to alFarahidiy (cf. AzZubaidiy, 1954,47). The "MuCamma" has been defined by Orientalists in these terms: "Anagram, sometimes charade, a kind of enigma propounded in verse and prose; its meaning is 'made blind' or 'made obscure'. It consists of specifying utterances where possible ambiguities exist in the pronunciation." In phonetic terms, the principle, underlying the whole phenomenon, is the exploitation of the silent stress for syntactic purposes.

The syntactic, emphatic, terminal, pseudo-tentative, and rhetorical functions of the silent stress were convincingly discussed and exemplified by Abercrombie (1968). It is quite possible to find parallels to those functions in Arabic. However, so as not to lengthen the digression, substantiation of the syntactic function would suffice our needs.

Following Abercrombie (1968), the syntactic function of the neuromuscularly-optional, silent stress may be well exemplified by holding comparisons between utterances which, out of their context and in a phonemic representation, which is devoid of stress-demarcation, would form minimal pairs. In actual fact, such minimal-pairness hardly ever arises in writing Arabic, because the Arabic writing system due to its prosodicity caters for the problem by the representation of initiality, mediality and finality within the word boundaries. However, despite their rarity in the written form, they are a common occurrence in speech. They would,

in the absence of a silent stress, result in misinterpretation of the message and frequently create a sort of comedy of situation which can only be defused by the insertion of a silent stress.

The first of the following examples from the Arabic linguistic enigmatics, the foundation of which is attributed to alFarahidiy (azZubaidiy, op.cit., 47), would provide an illustration of such a comic situation. There are two possible ways of saying the utterance:

/ya:ʔakmaqinna.s/

In the first way, it is produced by the insertion of a silent stress between /ʔakma/ (i.e. contextual vocative of Akmad) and /qi/, which contextually becomes /qin/. In so doing, the utterance stands for a request. It is spoken as follows:

/ʔya:ʔakma ' ^ 'qinna.s/ = O, Akmad, safeguard the people.

Nevertheless, the comic situation arises when the silent stress is dropped out. The dropping out of the silent stress transforms /ʔakma/ into /ʔakmaq/ (pausal form), which in this context indicates the superlative of "foolish". A priori, by uttering the vocative sentence, above, without the rhythmic neutralizer, i.e. the silent stress, the whole syntax of the utterance has been changed, although the phonemic syllable division has been kept intact. In the absence of the silent stress, the utterance has become,

/ʔa: ʔahma ʔqinna.s/ = You, the bloodiest fool of all  
people (I call).

In two lines from the enigmatics, after the minimal  
pair:

/kalla'matni/ = She talked to me;

and

/'kalla'^'matni/ = The strength of my forearm faded away;

we find the following pair:

/ʔa'yasma: 'C<sup>h</sup>i:la'sabran/ = Isma<sup>h</sup>il, be patient.

/ʔa'yasma: ^C<sup>h</sup>i:la'sabri/ = Asma, I've lost my patience.

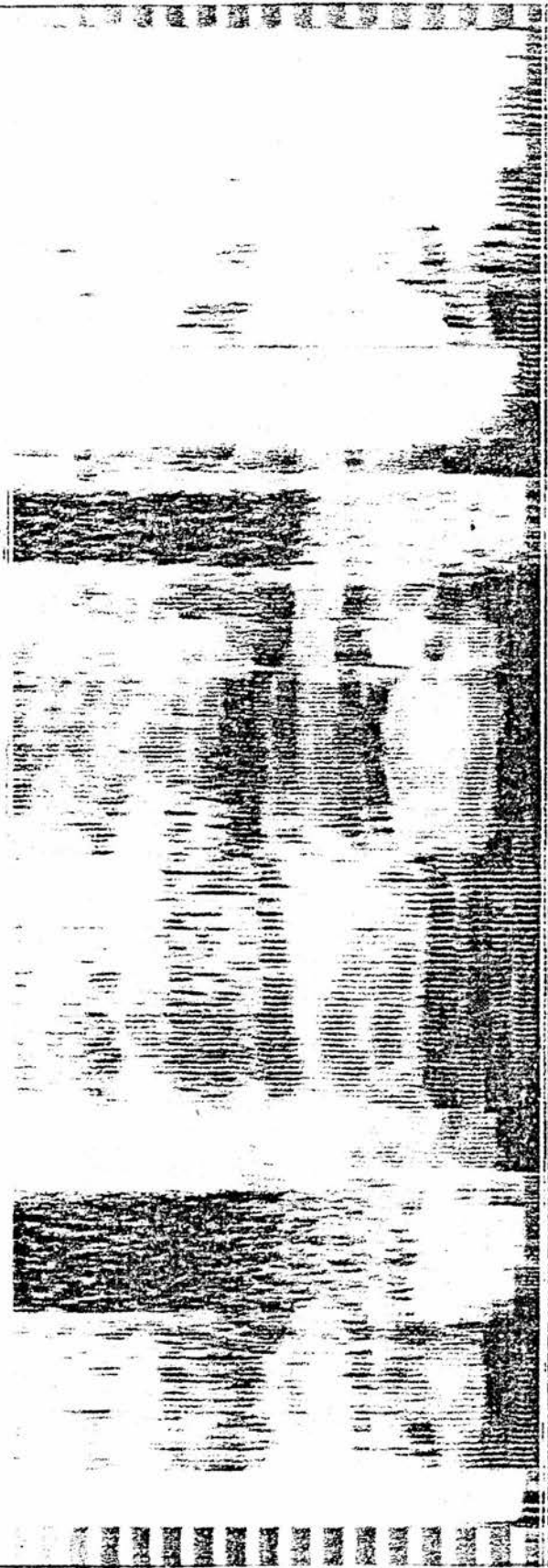
By comparing the spectrograms of the two utterances  
(Cf. p.113) it is noticeable that the fact that the peak of the  
stress-pulse does not correspond with the segments, /C<sup>h</sup>i:/, in the second  
marks crucial differences between the two utterances.

An analytical reading of the two spectrograms gives  
the following results, concerning the syllable /C<sup>h</sup>i:/, both in  
its stressed and unstressed environments.



? ə y ə s m a: ʰ i: l ə s ʌ b r i.

TYPE B/65 SONOGRAM • KAY ELECTRONICS CO. PINE BROOK, N. J.



? ə y ə s m a: ʰ i: l ə s ʌ b r ə n

Illus. 15.

Illus. 16.

	f <i>i</i> :	'f <i>i</i> :
* DURATION	f 120 msec. i: 240 msec.	f 120 msec. i: 240 msec.
* MAXIMAL CONTRACTILE EFFORT "REINFORCEMENT", JUDGED BY THE DARKNESS CHARACTERISTICS OF THE FORMANTS	F0 DARK F1 DARK F2 GREY F3 GREY F4 GREY	F0 DARK F1 DARK F2 DARK F3 DARK F4 DARK
* CHARACTERISTICS OF PATTERN DETAILS	WEAK STRIATIONS	STRONG STRIATIONS
First Result	Unstressed	Stressed

The first result with all the details it contains, i.e.

- (a) the overall syllable quantity,
- (b) the vowel quantity, and
- (c) the stressed-unstressed opposition,

brings us into full agreement with the Abercrombian conclusion (1965,28) that,

"syllable quantity is not directly dependent on either  
(a) vowel quantity or (b) stress."

However, the first result in our investigation, on its own, provides no answer to our quest, regarding the silent stress - which it is

naturally not presupposed to do - although it substantiates our point that the maximal contractile effort or the reinforced contraction which underlies /'ɛi:/ has been neutralized, in the production of /ɛi:/, by the insertion of a delaying action at a certain point, where it was spent under the cover of articulatory inertia.

In our search for what seems to be a point or rather a stretch of articulatory inertia, we find that the clue lies not in the syllable, per se, but in the articulatory syllable-devoid pulse which forms the transitional pause from /ma:/ to /ɛi:/ . In this pause of continuity lies the answer to our quest. In saying that it is a pause of continuity no contradiction whatsoever is involved because, although it is auditorily perceived as a stretch of silence, it is acoustically continuous by the evidence of the continuous striations on the /ɛi./-spectrograms (8000 HZ- and 4000 HZ wide band, and 2000 HZ narrow band + amplitude display) and by the evidence of the diminution of amplitude on the amplitude display; and it is articulatorily continuous due to the fact that the stroke of the respiratory muscles is accompanied by an articulatory movement for a vocoid, which gives it the look of a vocoid.

At this point it seems best to recapitulate our view of the silent stress. There are grounds for the belief that a silent stress is a phonologically-exploited, general phonetic



functor, which may be identified as a pause, different from any other pause in that it is a pause of continuity, auditorily perceived as a stretch of silence but neuromuscularly performed by a maximal, spatial and temporal contractile effort, in the same way as any other stressed syllable is performed, with the major difference lying in the point that, contrary to an articulated stress-pulse, a silent stress lacks articulatory superimposition.

F.I.A.ii Loading of the Phonetic Syllable-Potential:

The general phonetic syllable-potential has been described as an integrated, unitary, neurologically-controlled muscular, complex movement, which produces a respiratory unit on which a stretch of what we, for descriptive convenience, term as segments, is voluntarily superimposed by another complex of glottal and supraglottal activities. This is co-ordinated with the former complex by predetermined synchronization between the speech area and the respiratory rhythmic area in the CNS (Central Nervous System). This superimposition is what is termed in this thesis the loading of the syllable potential.

The description of the syllable has primarily taken either one of two approaches which may be identified by their criteria. The two approaches are:

- (i) the muscular movement-based approach; and
- (ii) the auditory criterion-based approach.

The muscular movement-criterion approach was propounded by such eminent phoneticians as Stetson (1928) who explained the syllable in terms of the pulmonic air-stream mechanism as a movement of the speech organs, and not a characteristic of the speech-sound; Pike (1943) who, with certain reservations, adopts a description

"quite similar to the description of the syllable given by Stetson in terms of chest-pulses"

(1972,53);

and by Abercrombie (1965,16-18) who caters for the absence of the perceptual factor in Stetson's description, which was lamented by

Pike (1972,53), by the concept of phonetic empathy which he characterizes as follows:

"The sound of speech, on the one hand, and the movements producing the sound, on the other, are in fact closely linked both for the speaker and the hearer. Speaker and hearer are usually looked on as two distinct and separate roles in conversation, but in fact each partakes somewhat of the activities of the other. The speaker as we have just seen, is simultaneously also hearer (he must be, for the normal conduct of speech); but the hearer is, in a way, simultaneously also speaker (at least when listening to his mother tongue) in so far as he 'empathetically' enters into the speaker's sound-producing movements, sometimes even making tentative movements of a similar nature himself. Recognition of this 'identity of speaker and hearer', or 'phonetic empathy', is important in understanding various problems in the perception of speech, particularly in connexion with its rhythmic features; and it provides an additional reason why speech is not listened to as other sounds are."

(1967,23)

The auditory criterion-based description, which was more or less influenced by the phonemic approach, was expounded by such authorities as Noel-Armfield (1931,51-52), Bloomfield (1933, 125), and Kenyon (1935,68-69) who respectively identified the syllables by such terms as stress or pitch, relative loudness of the phonemes, and sonority. Jones, who shares the phonemically-orientated, auditory criterion-based, approach with the above

authorities, explained the syllable in terms of prominence as follows:

"Each sound which constitutes a peak of prominence is said to be syllabic, and the word or phrase is said to contain as many syllables as there are peaks of prominence.

(211)

"The prominence of sounds may be due to inherent sonority, to length or to stress or to special intonation or to combinations of these."

(209)

"This undulation (of prominence) may be visualized as a wavy line with 'peaks' (denoting maxima of prominence) and 'troughs' (denoting minima of prominence)."

(210)

"In theory a syllable consists of a sequence of sounds containing one peak of prominence."

(212)

"The syllabic sound of a syllable is generally a vowel, but consonants may also be syllabic."

(213)

"When a vowel is immediately followed by the same vowel, the syllables are generally separated by a slight diminution of the loudness of the vowel due to a diminution in the force of exhalation."

(218)

(Jones, 1957, 55-57)

In following the Stetsonian line, we are adopting a view of the syllable based on the phonetic potential rather than the superimposed "loading". To put it another way: the Stetsonian line has been adopted in our present work in the light of the following characteristics:

- (i) It is a physiologically-based approach, that is to say it is not based on a postural approach to a sequence of sounds superimposed on an unlimited respiratory output, identified by the superimposed sounds of the sequence, as exploited in one language or a limited number of languages. Rather, it is based on a general human potential and not on a language specific. It is a general human approach to a general human potential.
- (ii) It is consistent in its explanation of speech production and speech perception. Within this consistency it manages to explain, on the same muscular basis, the roles of the speaker and the hearer-speaker; and subsequently manages to restrict the patterning of the superimposed sounds to the glottal and supra-glottal zones within the boundaries of the respiratory potential of the muscular movement.
- (iii) By its characterization of the chest-pulse as one unitary, integrated movement, made audible by the superimposition of sound producing-glottal and supraglottal complex of movements, it explains why, when a secondary articulation is superimposed on a segment, it leaves its impact on the whole unit within the syllable due to the abruptness of the chest-pulse.
- (iv) By its characterization of the chest pulse as one abruptly-executed movement, accompanied by an articulatory movement for a vocoid, it explains how a transitional is in effect a portion of the continuum produced by the chest pulse.
- (v) By the characterization of the generating movement as a contraction of the respiratory muscles, it provides the basis for an explanation of how the nucleus of the syllable is implemented by a summit of contraction, not by a vocoid, superimposed on that summit of contraction.

- (vi) By its characterization of the chest-pulse as a movement not necessarily identified by the superimposed, glottal and supraglottal complex of movements, it provides the basis for understanding why it is possible to extend a traditionally defined syllable over more than one chest-pulse, or to execute two traditionally defined syllables within the boundaries of the movement potential which, physiologically speaking, has a reserve potentiality in the intrinsic elasticity of the muscles involved in the pulmonic air-stream mechanism.
- (vii) By its characterization of the movement in terms of + reinforcement, it provides a convincing basis for a neuromuscular understanding of the chest pulse- and the stress pulse-producing muscular processes.
- (viii) By the definition of the muscular movement-output as a made audible output, it provides a fair argumentation for the silent pulses.
- (ix) So far, the approach has neither been superseded nor seriously challenged.

Now that we have briefly explained the stimuli in the background of our belief in the Stetsonian approach we may turn to investigate the loading of the phonetic syllable potential, as exploited in Standard Arabic, in particular.

It will be remembered that Stetson (1928,58-59) pointed out that it would be possible to utter such matrices as /aia/ and /ala/ with one chest pulse. It will also be remembered that Abercrombie (1967,36) remarked that,

"The weak point of the theory (Stetson's) presented here is that it seems very likely that words such as the English 'better' which all are agreed must be considered to consist of two syllables, can be uttered with only one chest-pulse."

It is true, of course, that such syllable matrices<sup>1</sup> can be uttered with one chest-pulse or two. It is not the complex of articulatory movements - be their output a C-V labelled syllable or more - that identify the chest-pulse, though there may be clues on the articulatory level. Rather, it is the contraction of the respiratory muscles and their respiratory output that define the boundaries of the articulatory movements. Not only are both means of exploiting the chest-pulse based on the muscular contraction, but the stressed-unstressed quality of the speech-stretch depends upon the nature of the innervation of the contractions. However, it is one thing to consider the general total potentialities of the aural medium; it is another thing to investigate the selection which a given language makes from that general total. It is in the selection of patterns from the general human potentialities that differences amongst languages arise. And because a chest-pulse is voluntarily exploited in a way specific to a given language, it is likewise true that languages differ in the minutiae of their exploitation of the potential.

It is possible to argue that what may be considered the exception in the patterning of the glottal and supraglottal complex of activities within the boundaries of a chest-pulse in one language, may be the result of a contextual rule in another. In fact, this is the case every time a matrix of syllables, structurally similar to the examples given by Stetson, Ladefoged, Abercrombie and Sievers (1901,209), forms the ictus of a foot and is produced by one

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<sup>1</sup> The term, matrix of syllables, is borrowed from Allen (1973). For a discussion of the phonetic literature on this phenomenon see Allen, op.cit., pp.170-179.

chest-pulse; while the case is reversed, i.e. the matrix is produced with two chest-pulses, if it forms the remiss of a foot or follows an accented CV or C<sup>V</sup>C. The two contextual constraints can be shown by the following examples:

<u>'tala</u>	=	He recited; it (masc.) followed;
ph <u>'tala</u>	=	He painted.
Ph <u>ta'lathu</u>	=	She painted it (masc.);
Ph <u>'θama?un</u>	=	Thirst (n.nom.)
<u>'la: tasum</u> <sup>1</sup>	=	Don't you humiliate ....;

where the horizontal link indicates the single chest pulse-produced matrices.

The realization of this phenomenon would explain why an Arabic native speaker-hearer - listening to a non-native speaker - would impressionistically express the absence of empathy, manifested by the non-nativity of the potential-exploitation, by the expression, "he/she stutters Arabic"; and simultaneously would explain why an Arabic native speaker, with no consideration of this phenomenon and without acquisition of a fair amount of phonetic empathy in English, tends to produce the matrices, marked by the horizontal link in the following words,<sup>1</sup> with one single chest pulse:

suffocation	/sʌf <u>ə</u> 'ketʃən/
beverage	/'bɛ <u>v</u> ərɪdʒ/

<sup>1</sup> No experiments have been carried out to check this in physiological terms. The theory is essentially dependent on the introspection of native speakers, who probably by the extension of their dialectal habits elide the short vowel after the first segment, thus producing an initial cluster or sequence.



receptive	/rɛˈsɛptɪv/
republic	/rɛˈpʌblɪk/
honeydew	/ˈhʌnɪdju/
gunner	/ˈɡʌnə/
designation	/dɛzɪɡˈneɪʃən/
dissertation	/dɪsəˈteɪʃən/
registration	/rɛdʒɪsˈtreɪʃən/

The specific exploitation of the phonetic potential unit in the above examples, which primarily involves, amongst other departures from a native speaker's exploitation of the potential, a departure from the quantity factor, would probably pass the attention of a native speaker or a non-Stetsonian phonetician. . . . However, if by any chance it attracts his/her attention, he would perhaps refer to it in such terms as "double ictus" (Weil, 1954, 304-312), or "disyllabic stress" (Allen, 1973, 170). As a matter of fact, the term "double ictus" is incompatible with the neurological basis of the stress-producing process; while the term "disyllabic stress" involves an oversimplification of the problem by congregating two constituents, the second of which is superimposed on the part of the potential where the maximal - spatial and temporal - contractile effort is reached.

As far as the native hearer is concerned, it is possible to argue that in the case of a non-native, Arabic speaker producing

the above items, the native speaker does not necessarily observe the difference due to the fact that he/she identifies himself/herself with the speaker by vicariously experiencing his/her acquired phonological habit of potential-exploitation, and sub-consciously expects to hear what he/she expects himself/herself to produce. However, the crux for this reconciliatory attitude in the native hearer's perception arises when the non-native, Arabic speaker is confronted with a word, say "record", where the distinction between the noun and the verb lies in the exploitation of the reinforced contraction to bear either one of the articulatorily-defined syllables. Thus, while the speaker manages to produce the noun under the same cover, he/she finds it difficult to produce the verb, unless he/she learns to change his potential-exploitation-habit by performing the verb with two pulses, the second of which is reinforced.

We have yet to consider the potential-producing factor which underlies the occurrence of such a phenomenon. It is tenable to argue that this phenomenon is not Arabic specific; rather, it is phonetically related to the potential unit, itself, and phonologically related to the manoeuvre involved in the exploitation of that potential.

It has been remarked by Ladefoged, et.al., 1958, that,

"sometimes a single increase in tension spans a group of articulations including two vowels separated by a

consonant closure (our records show that words such as "pity" and "around" may be spoken in this way); and sometimes there are two separate bursts of activity in what is normally regarded as a single syllable (e.g. in "sport", "stay" and other words beginning with a fricative followed by a plosive."

"These results indicate that a consideration of the muscular activity which occurs when reading lists of words in a normal conversational style is unlikely to lead us to the segments which are usually called syllables."

Although we agree with Ladefoged, et.al., on their conclusion on some segments which are usually called syllables, it does not follow that we agree with them on their conclusion on items with a fricative followed by a plosive. Discussion with neurologists suggests that this conclusion may have been influenced by other elements which contribute to the recording of the discharge of the motor-activity; primarily,

- (a) the recruitment order of motoneurones;
- (b) the time course necessary for the maximal contractile effort to be reached, which is a requirement in reading lists of words in isolation;
- (c) the muscle, in a state of slight tension, contains at any given moment a comparatively small number of contracted fibres (as they admit at the beginning of their experiment), which cannot be maintained without the discharge of slow motoneurones.

Those points lead us to conclude that in cases like "sport" and "stay", it is possible that they were reading a recording

of the discharge of a motoneurone, firing in preparation for the neurologically-controlled, potential-producing, contractile effort; and similarly it is possible that they were reading a discharge of a motoneurone, especially recruited to provide an abrupt transition to a maximal, spatial and temporal, contractile effort, because all the items recorded in the case of a fricative followed by a plosive were accented, monosyllabic words; and again it is possible that they were reading a recording of a neurological manoeuvre to prevent the possibility of forming two motor units.

We have seen that the neuromuscularly-generated, respiratory potential unit, i.e. the chest pulse, always carries with it the potentiality of being manoeuvred by the glottal and supraglottal complex of activities to produce a stretch of articulation, which may be voluntarily varied from one segment to a matrix that spans more than one traditionally defined syllable. A priori, it is possible to say that when we speak about a syllable in traditional terms we, in fact, speak of one way of loading the phonetic potential. It follows that we are in a position to argue that, in the case of an Arabic native speaker communicating in English with an English native speaker, the phenomenon observed above is attributable, not to a change in the potential, but to a language specific method of superimposition.

The phenomenon of superimposing more than one traditional syllable on the output of one respiratory pulse is not a novel one in the sense that it has been observed by a number of linguists and writers on the subject, but has been described on the basis of its exponents on the phonological level. In this respect, we have to quote Allen (1973,170) at length. Allen states:

"On the phonetic level, we have to consider the idea of a disyllabic accentual matrix; ....

"The idea that a stressed light syllable is in some way 'incomplete' is already found in Sonnenschein's explanation of forms like caue filling a resolved strong position in early Latin verse (1911,10): 'when the speaker or reader ... is confronted with the short syllable ca~ he cannot stop there but is compelled by the demands of his ear (which expects a long syllable) to take in the next syllable as part of the rise.'

More recently and objectively Kuryłowicz (1948/1960, 206f; 1949/1960,294ff; 1958,328f) has referred to the unaccentability of a single light syllable in Latin, correlated with the absence of light monosyllable words ...."

"The phonetic (as opposed to phonological) literature on stress is less extensive than one could wish. But there are at least some indications from living languages that the model of a disyllabic stress pulse for Latin is not phonetically unrealistic. One may begin with Sievers (1901,209), who claimed to have observed, for both German and English, that disyllabic words with short vowel in the first syllable followed by a single consonant (e.g. fasse, hammer) are 'expiratorily monosyllabic' but contain two 'sonorant' syllables, i.e. that they constitute (225) 'sonorant syllable groups with percussive expiration.'

Besides Newman (1946,183f), Allen mentions Durand (1955,233) as noting that


"... in a word such as Bobby there is a rise of abdominal pressure on the initial /b/ which then falls over the whole of the rest of the word,"

and that

"... one could consider the word as composed of a single syllable although this would be contrary to generally received opinion." (172)

And in experiments on air flow during speech, with English speaking subjects, Draper, Ladefoged and Whitteridge (1960, 1842) have observed

"... persistence of activity after the stressed syllable, which has the effect of checking the expulsion of air by the elastic recoil of the thorax."

"Examples such as those cited above are relatable to the intuitions described by Abercrombie (1964b,218f): 'There is felt to be something anomalous in a syllable which is stressed and yet short, followed by an unstressed one which is long .... My impression is that nowadays there are some types of English where Type A (sc. the "foot" ) is not found.'"

The view of Kuryłowicz concerning the correlation of the unaccentability of a single light syllable with the absence of light monosyllabic words, is shared by Weil (1954,311) who, commenting on alFarahidiy's hierarchy, observed that:

"Nur ein wirklich aussprechbares Wort kann ein Element sein; die Kürze kann aber nie ein selbständiges Wort bilden, sondern immer nur Teil eines Wortes sein. Sobald man sie aus dem Rahmen des Wortes herauslösen, sie abstrahieren und als kurze Silbe isoliert lautieren wolte, würde sie eben dadurch sogleich zur Länge werden und auch in der Schrift als solche (/kah/ كَه) dargestellt werden.\* Dass das die Auffassung von alXalil war, bezeugt ausdrücklich sein Schüler Sibawaihi (Ed. Derenbourg, II,56,20; vgl Schaade: Sibawaihi's Lautlehre, S.8). Da also eine einzelne Kürze (wie z.B. /f<sup>a</sup>/ فَ oder /l/ لِ) als solche, d.h. isoliert, nicht auszusprechen ist und deshalb auch für sich allein weder ein Wort bilden noch in der Schrift erscheinen kann, kann sie auch nicht mit der Länge verglichen oder ihr gar als Element beigesellt werden; denn qad bildet zwar eine Länge, ist aber ein metrisches Element nur deswegen, weil eine einzelne Länge als isoliertes Wort aussprechbar ist."<sup>1</sup>

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\* It has to be pointed out that no short quantity, i.e. mutaharrik CV forms a morpheme in alFarahidiy's lexicon. The minimal, lexical item in alFarahidiy's lexicographical approach is either a stable bi-phonematic, i.e. CVC, or an unstable bi-phonematic, i.e. CV. Cf. pp.14-5, 35-6.

<sup>1</sup> "Only a truly pronounceable word can be an element; short quantity can never constitute an independent word; it can always only form part of a word. The moment one attempted to separate it out from the frame of the word, to abstract it and to pronounce it as a short syllable in isolation, it would immediately become long in the process and be represented as such in writing ( كَه ). That this was alXalil's view is attested explicitly by his pupil Sibawaihi (Ed. Derenbourg, II,56,20; cf. Schaade: Sibawaihi's Lautlehre, p.8). Since therefore an individual short quantity (as, for instance فَ or لِ) cannot be pronounced as such, i.e. in isolation, and can by itself neither form a word nor appear in writing, neither can it be compared with long quantity nor ranged alongside it as an element; for whilst /qad/ forms a long quantity, it is a metrical element only because an individual long quantity can be pronounced as an isolated word."



In support of alFarahidiy's impressionistic intuition, which was probably based on the auditory sensation, we may appeal to the evidence of neurophysiology.

With regard to the time course necessary for the respiratory, maximal contractile effort, Mognoni, et al. (1968,193) observed:

"On the time course of the pressure exerted by the respiratory muscles, 0.2 sec. are necessary to reach the maximal, contractile effort, achievable at a given volume."

And again, Kugelberg and Skoglund (op.cit.) remarked that:

"In man activation of the muscle starts with a unit of small amplitude followed by units of larger size."

Still, if we re-read the experiment of Ladefoged, et.al. (1958), where the utterance, "the old man doddered along the road", is electromyographically recorded, we observe that before the maximal contractile effort is reached in the production of ('old), units of small amplitude discharge in preparation for the stress-pulse.

The points of view cited in support of the point that a short quantity,  $C^V$ , has quantitatively and auditorily to take in the following traditional syllable, would perhaps give support to the tentative introspection of how Arabic native speakers produce



words, initiated with a short syllable, and how they shift that linguistic habit to the way they speak English. (Cf. pp.123-5). And they are cognate to the matter, as far as alFarahidiy is concerned, in view of his prosodic hierarchy and its application to the generative circles.

It will be remembered that alFarahidiy, in the generation of rhythmic patterns, does not consider  $C^V$  a generative entity. The only generative entities in his system are the /ʔasbab/ and /ʔawta.d/ (cf.pp.87-90). The short quantity is no constituent at all in the generative process, although it is represented as an element in the graphic representation of the rhythmic paradigms.

Within the above context, it is tenable to argue that the rhythmic paradigms, in alFarahidiy's system, indicate something more than the quantity and structure of the constituents within the paradigm-boundaries. They indicate constituents which occur with one stress pulse underlying them. For a native speaker, the constituents, /ʔasba.b/ and /ʔawta.d/, are stressed when they initiate a foot, whilst they are unstressed if they occur as a remiss in the foot-structure. Such constituents have a clear perceptible stress when they occur as the ictus of the foot. In fact, if alFarahidiy viewed the /ʔasba.b/ and /ʔawta.d/ as quantitative measures, and did not intend to express another factor which he had observed in the recitation of Arabic verse, he would not have the faintest need to segment the rhythmic paradigms into /ʔasbab/ and /ʔawta.d/,

because if they were intended as quantitative measures, the graphic representation of the paradigms around the generative circles would be quite enough. One can even go to the extreme and ask whether they are at all necessary if quantity was the main concern of alFarahidiy. If alFarahidiy had been exclusively concerned with the quantity of the paradigm, the /mutaharrik/, i.e.  $C^V$  and the /sabab - Xafi.f/, i.e.  $C^V C$  or  $CV$  could have been fair enough. There could have arisen no need for /sabab - 0aqi.]/, i.e.  $C^V C^V$  and /watad--majnu.<sup>c</sup>/, i.e.  $C^V C^V C$ , or  $C^V CV$ .

According to alFarahidiy's system, the following constituents are the elements which might provide the entries to the generative circles; and in our terminology, they are the constituents which might be stressed if they occur as the initiatory constituents in the rhythmic paradigm, or in other words, they are the constituents loaded on a stress-pulse, taking into consideration that  $C^V$  in a watad unit might probably be produced on the marginal elasticity of the muscular movement. Those constituents are:

/ʔasba.b/ :  $C^V C$  or  $CV$ ,  $C^V C^V$   
 /ʔawta.d/ :  $C^V CV$ ,  $C^V C^V C$ ,  $CVC^V$ ,  $C^V CC^V$ ,  $CVC^V C$ .

We may now return to the structure of the constituents in alFarahidiy's prosodic system. On the face of it, the structure of the constituents, in certain respects, seems to depart from the syllable structure as traditionally defined. The  $C^V C$  and  $CV$ , i.e.

the /sabab--Xafi.f/, are in full agreement with the traditional syllable. However, the other constituents,  $C^V C^V$ , i.e. the /sabab-- $\theta$ aqi.l/,  $C^V C^V$ ,  $C^V C^V C$ , i.e. the /watad--majmu.<sup>C</sup>/, and  $CVC^V C$ ,  $CVC^V$ ,  $C^V CC^V$ , i.e. the /watad- mafu.q/ seem to represent more than one syllable in the traditional sense. Nevertheless, this does not necessarily imply that this departure contradicts with the general human potentialities. In human physiology (cf. Guyton, 1977), it has been found that the human muscle in its contraction and relaxation has a margin of elasticity which it exploits when necessary to implement extra margins of contraction and relaxation; and within this context, it is tenable to argue that in the production of a constituent like the watad, the respiratory muscles exploit their margins of elasticity, because each language has its own rules in this matter. In a motor sense, then, the watad constituents may be explained on the basis that in their production there appears to be a maximal contractile effort in space, but not necessarily in time. One may note, for instance, that it is probable that a watad constituent, in the motor process, differs according to the position within the foot boundaries; it is usually borne on a stress-pulse after a neurophysiological manoeuvre of the discharge of preparatory small amplitude units in the case of a  $C^V$ -initiated watad in which the introductory margin of the contraction, i.e. the transition between two pulses, is exploited; and in the case of a CV-initiated watad, because the pulse is given enough time to reach its maximum, it is probable that the final  $C^V$  exploits the final margin of transition between two pulses. In fact, this implies no

contradiction with the Stetsonian line, because Stetson's theory does not in itself provide a general phonetic criterion, given a particular sequence of vocoids and contoids, for predicting where the arrest and release points will come. The whole essence of the motor theory is that the sounds make the syllabic movement audible, but do not determine it.

#### F.I.A.ii.a Timing in AlFarahidiy's System

Up to this point we have discussed aspects of the Stetsonian approach, and explained how the Stetsonian theory would perhaps sustain the hypothesis that certain metrical constituents used by alFarahidiy may be interpretable within that perspective of the syllable. In so doing, the ground is prepared for a discussion of the timing factor in alFarahidiy's system which may be considered as one of the pioneer isochronous approaches to verse structure, and by extension to any form of Arabic, be it verse, prose or conversation. We may now turn to investigate the application of isochronicity to his system, because it is most useful in the absence of any observations on the timing factor, except the system itself which has been earlier introduced.

Let us consider the line:

/ya: qalbu ʃaddiḍ kamada. famauʃidu lbaini ʔada/

English translation:

O my heart, be sad anew, tomorrow is departure-day

The line, as spoken by an Arabic native speaker, contains four stress-pulses, which underlie the stretches /ya:/, /ḍiḍ/, /famau/ and /bai/. Now if we apply alFarahidiy's rhythmic patterning, we get the following:

ya:qalbujaḍ/didkamada/

famaufiḍul/bainiḍaḍa/

Looking at the line in its rhythmic segmentation, it is at once clear that there is a one-to-one parallel between what in our terminology we call stress-timing and alFarahidiy's prosodic segmentation. Nevertheless, when we decompose the third higher constituents, i.e. the feet or /fawa.sil/, into their second higher constituents, i.e. sababs and watads, we might be puzzled by the first unit in the second hemistich, /famau/. It may not be immediately obvious why this should be the case. However, if we consider the above watad-unit morphologically, things begin to be puzzled out: it contains one morpheme, /'fa/ (for the reason that, because), and the first accented constituent of /maufiḍ/ (time, date, appointment); each of which happens to be accented in isolation. But it will be gathered that in speech the foot is independent of word boundaries. In normal conditions, the speech continuum is not demarcated by discrete morphophonological entities; rather it is demarcated in stress-timed languages by salient or silent stress-pulses separated by chest pulses over which articulatory movements in the glottal and supraglottal zones are superimposed.

A recollection of the neuromuscular, stress-pulse-producing process which does not, neurophysiologically speaking, allow for the discharge of two fast motoneurones consecutively, would perhaps provide a fair explanation for the

above phenomenon: due to the principle of economy of effort and the neurological constraints of the stress-producing process, there are grounds for the conviction that, not unlike the articulatory juxtapositional assimilation, a juxtapositional movement concentration is performed to cope with certain neuromuscular restraints, especially when the impossibility of producing two maximal, spatial and temporal contractions in a row arises.

The juxtapositional concentration of the stress-pulse movement is, therefore, a superimpository manoeuvre which is performed when two stress-pulses (which, in isolation, bear two accented constituents) happen to follow one another or to form the initiatory constituent of a foot in stress-timed languages. This phenomenon can be brought home to us by the Arabic example, above, and by examples from other languages. In English, the historically compound word (aboard) may be uttered with one stress-pulse; and similarly, the word (around) may be uttered with one single increase in tension, as has been substantiated by Ladefoged.

Another case of superimpository manoeuvring is the case of what we may term as superimpository concentration. What this means can be identified as follows: the superimpository concentration procedure is a specific way of exploitation of the output of the neuromuscular movement, due to temporal factors which

necessitate the concentration of more than one traditional syllable over the output of the movement; that is to say, because the superimposed traditional constituent does not fully consume the output of the neuromuscular movement, another constituent is superimposed within the output boundaries for the purpose of effort-economy.

The examples - (pity) which was given by Ladefoged, et.al., (op.cit.), and (better) which was given by Abercrombie (op.cit.) - are examples of superimpository concentration in English; and /lima' <sup>لِمَا</sup> / (What for?), /ʔama? <sup>ظَمَأْ</sup> / (thirst), /maʔar <sup>مَطَرْ</sup> / (rain), and /qadam <sup>قَدَمْ</sup> / (foot), are examples of superimpository concentration in Arabic, for it is due to the very short quantity of the constituents: (pi-), (be-), (li-), (ʔa-), (ma-), and (qa-), that the constituents: (-ty), (-tter), (-ma), (-tar), (-ma?), and (-dam) are concentrated on the same single pulse-outputs which include the former constituents as well.

All the preceding discussion of the loading of the neuromuscular output potential and the superimpository manoeuvring brings us to the conclusion that there is always the possibility of a certain amount of play within the potential output boundaries; all that is necessary for a gifted phonetician to determine such amounts of play is a keen threshold of auditory sensation which would enable him/her to calibrate the production-audition parallel,

because, after all, the ear of a phonetically aware native speaker is the final arbiter in the realization and determination of the boundaries of the rhythmic entities in his/her mother tongue. Such qualifications were never lacking in the phonetic thinking of alFarahidiy, the phonetician, the poet, the musicologist and the mathematician. It is to such qualifications that we owe the systematization of Arabic verse structure. However, it remains to be remarked that had such a system not lacked our terminology, and had it had a sort of access to stress as a scientific entity, it could in all probability have been considered as one of the perfect approaches to a stress-timed language.

#### G. CONCLUSION

We may conclude our analytical, phonetic study of the first area of alFarahidiy's legacy by summarizing the main points which have been discussed so far.

##### G.1. Preliminaries

A. AlFarahidiy's prosodic system very likely represents a culmination of a long and previous study and attempts at systematization, which probably have their grassroots in Akkado-Babylonian grounds.

B. By the principle of elimination, /alHirah/, the cradle of the Northern Arabic script, may have a just claim to be the



habitat where the Arabic verse structure, per se, was put to systematization.

C. All Arabic linguists considered verse as a form of speech; and despite their long-standing controversies over the merits of verse and prose (whether they are syntactic or stylistic) the fundamental concept of the unitary nature of verse and prose as forms of speech remained the common denominator in all their linguistic thinking.

## G.2 AlFarahidiy's System

A. Al<sup>Ḥ</sup>arud has been defined as the science of the patterns of identification by means of which the measure of the well-formed and ill-formed lines of equally-organized and periodically-demarcated form of speech, unique to the poet only on the ideational and semantic levels, is distinguished.

B. Etymologically, al<sup>Ḥ</sup>arud is derived from the medial interval which terminates the first hemistich and initiates the second hemistich on analogy of the central post in the tent.

C. In setting out to explain how alFarahidiy systematized the potential and actualized spaces /bukur/, it has been established that the system includes segmentational procedures and generative circles.

D. AlFarahidiy's segmentational procedures involve a triphased process which includes:

- (a) the decodification of the Arabic writing system into a form of prosodico-phonematic transcription,
- (b) the recodification of the decodificatory transcription into an abstract, twofold and two-elemental notation,
- (c) the recompilation of the recodified notation into higher degree compounds, rhythmically measured by fawasil.

E. The hierarchy of the system, on the analytical, segmentational level, starts with the segment up to the line.

F. The generative circles were based on five mathematico-logical principles: equivalence, substitution, reversibility, potentiality, and actualization.

G. On the level of the foot synthesis, the system admits two major units, the sabab and the watad, which have been found in the course of our analytical, phonetic study to be stretches - matrices and syllables - superimposed on the single potential outputs of neuromuscular pulses.

H. By the circular shift of sababs and watads as initiatory constituents, i.e. stressed constituents, alFarahidiy could auditorily generate the rhythmically possible patterns of Arabic verse structure.

### G.3 Analytical Discussion

On the Stetsonian pathway the following points have been propounded:

A. Similar to all other neuromuscularly-controlled, rhythmic behaviours, the rhythmic output of speech is performed by a complex of processes in which the analytical portions of the brain control the motor activities by a sequence which includes, (a) the determination of the sequential movements to perform the overall task, and (b) the control of the sequential movements in the form of graded and integrated sequences on the excitatory level.

B. The rhythm of speech originates in the periodic recurrence of one sort or another of motoneurones, which activate two distinct types of motor units, on the output of which speech constituents are superimposed; it is the co-ordination of those fast and slow motor units that determines the categorical characteristics of languages.

C. Rhythmicality is a co-ordinate neuromuscular process which produces a neuromuscular hierarchy on which a respiratory hierarchy is based. The neuromuscular hierarchy comprises, (a) the discharge of fast motoneurones, separated by the discharge of intermediate and slow motoneurones, which activate two types of motor units - fast and slow units - the respiratory output of which bear the speech, stressed and unstressed constituents; (b) a combination of the lower degree constituents to make up a chain of constituents which bear the feet; and (c) a complex of feet to constitute the substratum for intonational patterns.

D. A stressed constituent does not differ from an unstressed one in the formulary phases; it differs from it in the nature of innervation. A stressed constituent is based on the neuromuscular process which produces an explosive power contraction.

E. A silent stress, which might be claimed to be a general phonetic phenomenon, may be identified as an inaudible, explosive power contraction, implemented by the superimposition of articulatory inertia over a stress pulse in the speech continuum.

F. In making the potential output of the neuromuscular movement audible, there is always the possibility of a certain amount of play within the potential output boundaries by accelerating the complex of glottal and supraglottal movement for neurological and temporal necessities.

G. Not unlike the articulatory juxtapositional assimilation, superimpository manoeuvring may be introduced to produce, (a) juxtapositional concentration of the stress-pulse movement for neurological constraints, or (b) superimpository concentration for the purpose of economy of effort.

#### G.4 Conclusion of the Conclusion

From the analytical phonetic study of the first area of alFarahidiy's legacy it is possible to draw a number of conclusions about alFarahidiy's approach to Arabic verse structure.

A. There is no preclusion against the conclusion that his approach is a pioneer phonetic one. The degree of detail in the segmentational procedures and the convincingly rigorous generation of the rhythmic patterns which provide complete coverage of the Arabic rhythmic potentiality do support the above conclusion, and also support the conclusion that it is based on a clear view of analysis and synthesis as applied to the rhythmicity of a stress-timed language.

B. In application, the system provides a solid basis for the conclusion that it is - in a retrospective perspective - an isochronous approach to the rhythm of Arabic verse.

C. It is clear that alFarahidiy had no access to the concept of stress. Nevertheless, it is something to realize the concept and define it; but it is quite a different thing to sense and exploit the stress factor in a prosodic system. From the theoretical and practical angles of vision, it seems tenable to say that alFarahidiy managed to focus his system around the sensation of the stress-concept, as relevant, not to a segment, but to a constituent which includes structural variants of the superimposed stretches.

D. The introduction of the hierarchic unit, sabab and watad, enabled alFarahidiy to generate the rhythmic patterns of Arabic, and to exploit, in a well justified and uncommitted way, the syllable as traditionally defined, which is not necessarily

the one and only stretch of segments that can be superimposed on the potential.

In actual fact, the innovation of such units to indicate, in our terminology, forms of making the potential audible, provides a solid evidence to the independence and ingenuity of alFarahidiy's system.

E. Despite the fact that there is but little theoretical hint at silent stressing (as far as I am aware there is - in the linguistic works of the Arabic phoneticians - none but alFarahidiy's definition of the phenomenon of /assakt/ (lit. pause) as

"one of the tonal elements; it is a non-expiratory breath  
(a pause, in other words) between two tonal units"  
(MS.,520),

there is plenty of evidence in the 'Mu<sup>C</sup>amma.' (Enigmatics) that the phenomenon and function of such a pause of continuity were realized and consciously exploited.

F. The remaining important conclusion is that the complexities of the system arise from two major impediments:

- (a) the absence of a clear, theoretical presentation of the relationship between the idea of the stress-pulse and the sabab-watad constituents in a foot initiatory position, and
- (b) the absence of a detailed, theoretical explanation of the reasons why the sabab and watad have been

conventionalized as the fundamental in the generative patterning and the synthetic hierarchy of the foot.

Clearly what is necessary for the research to regain its actual weight on the theoretical level is further research into manuscripts. It is hoped that one day a researcher will be lucky enough to find fragments of alFarahidiy's al<sup>6</sup>arud, which we presume would shed further light on the theoretical preconceptions in the background of the system.

G. However, since optimism in this respect is not very rigorously justified, there is no further need for delaying our final conclusion in the waiting for such a lucky discovery.

*We take the view that alFaradhidy's system is practically an isochronous approach, worked out on the basis of the simple sensation of stress-timing. Within this perspective, one must therefore expect that the theoretical re-formulation of the system on the Stetsonian pathway and the identification of the wataḍ- and sabab- constituents as forms of loading the outputs of neuromuscularly predetermined contractions of the respiratory muscles would make of alFarahidiy's system the most applicable, and probably the best available, approach to Arabic verse structure. And, a priori, it would by extension provide complete coverage of all rhythmic phenomena in all forms of Arabic (standard) speech.*

2

*THE TIME-SUBSTRATUM  
UNDERLYING  
AL-FARAHIDIY'S  
PROSODIC SYSTEM*



A. PREAMBLE

In this second area of alFarahidiy's legacy it is useful to recall that, in spite of the generally-agreed view that the Ancient Arabic poets have had their established laws of quantity, no serious attempt to tackle the time-substratum underlying the constituents within the foot boundaries in Arabic in modern times has been made. In fact, the only attempt which is still far from being outmoded is the mathematical - temporal and structural - notation, which was introduced by alFarahidiy in the procedural phases of segmentation. In principle, alFarahidiy's notation constitutes the starting point in this investigation.

It has been remarked that in the segmentational procedures alFarahidiy's system includes the phase of the re-codification of the decodificatory transcription into an abstract two-elemental notation wherein (0) stands for  $C^V$ , and (0I) stands for  $C^VC$  or  $CV:$ , whilst (00) stands for  $C^VC^V$ . In summary, alFarahidiy's time hierarchy is principally based on the view that the prosody of synthesis,  $^V$ , contributes nothing in

quantity terms, and  $C^V$  does not stand on its own as a rhythmic entity.

## B. POTENTIAL AND SUPERIMPOSITION

In (F.I.A.ii) it was pointed out that the neuromuscularly-generated potential unit carries with it the potentiality of being manoeuvred to produce a stretch of articulation which may be voluntarily varied from one segment to a matrix that spans more than one traditionally defined syllable. A voluntarily-varied manoeuvre of this kind may be implemented by accelerating or slowing the glottal and supraglottal complex of activities within the boundaries of the neuromuscular movement. In similar fashion it may be plausible to remark that, under normal circumstances in the production of the speech continuum, the superimposition of the complex of movements in the glottal and supraglottal zones to produce the audible constituent concerned is bounded by the potential output of the neuromuscular movement, whose quality, intensity and rapidity is controlled in such a way as to actualize the phonetic quality of the constituent. It is in the muscular actions and reactions of this multiple complex and in the physiological interactions between the potential-producing contraction and the superimpositional movements that the time-substratum underlying the superimposed constituents and their internal, time interdependencies, lies.

The realization of the relationship between the superimposed constituents and the general phonetic potential is important for the present study, in particular, and the study of other languages, by and large, because it provides, we believe, the material for an answer to the question concerning the time-substratum underlying alFarahidiy's prosodic system as well as the answer to the question of the time-substratum and symmetrical time-relations in other languages which may come under investigation.

#### C. THEORY AND RATIONALE

"The quantity of the syllable is a proportion of the total length of the foot within which the syllable occurs; and it is relative to the quantity of the other syllables in the foot. We cannot therefore say anything about the quantity of the syllable until we know its place in the foot."

"... (1) syllable quantity is not directly dependent on either (a) vowel quantity or (b) stress;  
(2) the foot is independent of word boundaries."

D. Abercrombie, "Syllable quantity and enclitics in English", In Honour of Daniel Jones, 1964, 217.

There is empirical evidence to support the view that the superimpository movements within the boundaries of the potential output and the distributional quantities of the

constituents within the foot boundaries follow neuromuscularly-predetermined time scales which constitute the time-substratum underlying the time and timing hierarchy of a given language; such a time-hierarchy finds its surface representation in the time-relations which hold among the segments within the single chest pulse, and the quantities of larger stretches of segments within the foot boundaries. These relations may be approached in an oversimplified manner as mechanical, muscular actions and reactions. The most obvious example would perhaps be, in the case of Standard Arabic say, in the adaptation of the duration of the glottal stop to cope with the neuromuscular requirements of producing the opposition between the stress-pulse- and chest-pulse- borne constituents. In the case of a glottal stop initiating a stress-pulse-borne constituent, it is noticeable that such a segment is usually longer than a similar segment initiating a chest-pulse-borne constituent. In actual fact, this quantity-opposition may be accounted for by the neuromuscular lemma that the intercostal muscles take the duration of about 0.2 sec. (1 inch on a spectrogram) to reach their maximal contractile effort at FRC. It would, therefore, be quite plausible to conclude that the stricture involved in /'?--/ should necessarily be longer than the one involved in the production of / ?--/, which takes so short a while that might mislead some impressionistic descriptivists into the application of the voiced-voiceless opposition to the glottal stop (Cantineau, 1960, 178,280) although the whole opposition falls apart on the basis of its

incompatibility with the way the glottis is used in the production of such a stop.

Another evidence may be given from the different durations of the voiceless palato-alveolar fricative in Arabic (cf. Plate 5). The duration of such a segment differs considerably in the speech of the three speakers in the experiment, although the general ratios in the personal tempo remain intact. Such a segment takes a short duration. It takes a short duration when it occurs in a releasing position in comparison with the duration it takes when it arrests a closed syllable. Nevertheless, this contrastive, durational phenomenon, concerning the same segment, can be explained in the light of the articulatory, muscular equation:

$$Y = Z$$

where  $Y$  stands for the aggregate of  $X + \frac{X}{3}$ . Hence, the potential output is muscularly and mechanically divided into two equal divisions -  $Y$  and  $Z$ ; where  $Y$ , durationally speaking, is actualized in the case of  $/m_1s/$  by  $rC+^V$  (releasing consonant $+^V$ ), and the same is true in the example  $/fay/$ , whereas  $Z$  is actualized in the first example by  $aC$  (arresting consonant)  $/s/$ , and by  $/y/$  in the second example. Hence,  $rC^V = aC$ .

It is our belief in the present experiment that the primary information-source for an 8th century A.D. phonetician in

his systematization of the time-interdependencies in a given language is the kinaesthetic feedback and auditory sensation, in no way different from the method a modern phonetician may use in the absence of a time-measurement machine. We also assume that the most reliable criterion is the ear of a highly-trained phonetician, not because it surpasses the machine in accuracy, but because speech is after all meant to be addressed to a human ear, and also because a machine, in the case of acoustics, say, gives what the physicist has intended it to give. However, a machine remains a machine and the corpus of data remains a corpus until a phonetician with a reasonable amount of knowledge of speech-production and speech-perception handles the corpus and systematizes it in such a way that restricts the machine to its legitimate field: an accessory to investigation, but in no way a substitute for the human ear. It is also our belief that alFarahidiy, with his high training in music and musicology, which we presume provided him with a fair amount of ear-training, and with his mathematically-systemic mentality, was the man to systematize the time-relations in Arabic.

In actual fact, alFarahidiy's systematization of the time-relations in Arabic speaks for itself in his prosodic notation and his statement that the <sup>n</sup>harakat [minimal recognizable] unstable sounds in which the vowels originate = [transitionals, i.e. short vowels] are /ʔabʕa:d/(portions, sing. baʕd, less than a half) of the preceding sounds".

#### D. PURPOSE

The object of the experiment was to investigate and substantiate the proportional, durational interrelations among the segments within the potential-output-bound constituents, and to verify the plausibility of the contextual time-substratum which underlies alFarahidiy's prosodic system, as expressed by the basic, notational units:

$$\begin{aligned}C^V &= 0 \\CV: &= 0I \\C^VC &= 0I \\C^VC^V &= 00.\end{aligned}$$

Besides the measurement of the basic units above the experiment included measurement of the watad-constituents to authenticate our view that the duration of the watad-constituent varies in accord with the phonetic quality of the watad-bearing potential. In addition, the experiment included measurement of the feet, after alFarahidiy's foot-segmentation method.

#### E. PROCEDURE

Seven hemistichs of different rhythmic patterns were presented to three mid-thirties, male speakers of Standard Arabic - (MH. from the village of Shagra (Najd), Saudi Arabia; and ALJ. from Baghdad, Iraq; and MAS., born at Safad, Palestine, and brought

up in Damascus, Syria; the first two informants had good knowledge of Standard Arabic but they had no phonetic training; the third informant was a phonetician and a poet) - just before the recording sessions in the case of the first two informants. The material was diacritized after alFarahidiy's method<sup>1</sup> to avoid any possible misinterpretation of the contents. The corpus was recorded in the Phonetics' sound-insulated room of the University of Edinburgh with the lapse of three months' time between MH. and ALJ., who never met before or after the experiment.

Once the recordings were made the spectrographic material was obtained from spectrograms per hemistich which, due to the maximal time capacity of the Kay Sona-Graph, Spectrum analyzer, 1-16000 HZ, 7029, i.e. 2.4 sec., had to be distributed in certain cases on two or three spectrograms with overlapping regions to provide reference points in the continuous display. Each spectrographed recording or piece of recording was terminated with a "pip" - calibration tone - at the frequency of 500 CPS. The data was gathered in the form of three spectrograms of each item:

- (i) a wide band spectrogram of 0-8000 HZ;
- (ii) a wide band spectrogram of 0-4000 HZ;
- (iii) a narrow band spectrogram of 0-2000 HZ, + amplitude display, separated from the harmonics by a baseline.

Spectrograms of these three types were made for each recorded item to provide the utmost accuracy in reading and measuring all possible

---

<sup>1</sup> Cf. Area 3.



details. All three spectrograms of each speaker's recording of each item were calibrated on illustration boards for contrastive and comparative observations.

The spectrograms were then examined for general characteristics. Two major points became immediately clear:

(i) The tempo of MH's speech was slower than ALJ's, which may be attributed to MH's recitational tendency; the tempos of the speech of ALJ and MAS varied slightly; ALJ's seemed slower than MAS's;

(ii) Despite the tempo-differences, it became quite obvious that a change, say, in the quantity of a stressed syllable entailed changes in the quantities of the other constituents within the foot boundaries.

The segmented spectrograms were then measured to investigate the symmetrical time relations within the constituent boundaries. The actualizations of alFarahidiy's prosodic time units were measured in 0.1 inch units, transformed into milliseconds on account of the mathematical relation which exists between space and time on the horizontal plane of the spectrograms:

5" = 1 sec.

1" = 0.2 sec.

0.1" = 0.02 sec. → = 2 csec. → = 20 msec.

In measuring the segments, though F0 , FI , and F2 , the voice bar along the baseline which differentiates the vowels and vowel-like sounds as well as the nasals (Potter, et. al., 1947), and the frictional random noise (Pulgram, 1959) on the 8000 HZ-spectrograms were the chief points of reference, no quantification was finalized without consulting the other spectrograms, especially in the cases of homorganic sounds and geminated consonants, where reference to the voice harmonics and amplitude displays seemed necessary. For instance, in the case of a geminated consonant there appears a momentary amplitude change which may mark the termination of a potential output-bound unit and the initiation of another.

## F. RESULTS <sup>1</sup>

(Cf. the Plates and Tables.)

<u>Original Size</u>		<u>Reduced Size</u>	<u>Approximate Scale of Reduction</u>
P1.1	20.2"	6.9"	1/3
P1.2	25"	8.25"	1/3
P1.3	25"	8.25"	1/3
P1.4	25"	8.25"	1/3
P1.5	20.2"	6.9"	1/3
P1.6	20.2"	6.9"	1/3
P1.7	20.2"	6.9"	1/3

---

<sup>1</sup> The measurement is carried out to the nearest 5msec. with the full realization that there may be a minor  $\pm$  margin of error in the measurement of quantities less than .5 msec.

TABLE I (cf. Plate I)

mant	NE.					ALJ.					WAS.				
	hf.	hk.	sb.	wd.	fel.	hf.	hk.	sb.	wd.	fel.	hf.	hk.	sb.	wd.	fel.
ms.	C&V	v	Syl.		Foot	C&V	v	Syl.		Foot	C&V	v	Syl.		Foot
	040					070					060				
	I60		240			I40		I90			I20		I80		
	I60					90					I10				
		055					030					035			
	I20					090					I20				
		040					030					040			
	I60			600		I20			440		I60			500	
	I20					090					I10				
		040	200		<u>I060</u>		030	I40		<u>0820</u>		035	I80		<u>0920</u>
	090					090					I00				
	I80		300			I90		300			200		300		
	I20					090					I40				
		040					030					045			
	060		360			060					080		360	360	
		020					020	360				080			
	060					080					075				
	I20		I80		<u>0900</u>	I60		240		<u>0900</u>	I50		225		<u>0920</u>

TABLE 2 (cf. Plate 2)

mant	NE.					ALJ.					WAS.				
	hf.	hk.	wd.	sg.	fel.	hf.	hk.	wd.	sg.	fel.	hf.	hk.	sb.	wd.	fel.
	C&V	v	Syl.		Foot	C&V	v	Syl.		Foot	C&V	v	Syl.		Foot
7	I20					090					090				
0		040					030					030			
m	I60		340			I20		280			I20		280		
s	I20					090					090				
a		040					030					030			
f	I60		320			I20		280			I20		280		
r	I20					090					075				
a		040					030					025			
h	I00					090					080				
u:	200			500		I80			420		I60			420	
	I00				<u>I220</u>	040				<u>I020</u>	060				<u>I040</u>
m	I30					085					080				
a:	260		400			I70		250			I60		240		
s	I30					090					090				
a		040					030					030			
f	I70		340			I20		250			I20		250		
r	085					I00					I00				
a		030					035					035			
n	I10					I00					090				
i:	220			450		200			440		I80			440	
	+050				<u>I200</u>					<u>I000</u>	+030				<u>I040</u>
r	I50					090					I00				
a		050					030					035			
n	200		400			I20		280			I40		280		
e	090					090					I10				
a		030					030					035			
	080					090					060				
a:	300			600	<u>I000</u>	090			420	<u>0700</u>	I20			420	<u>0760</u>

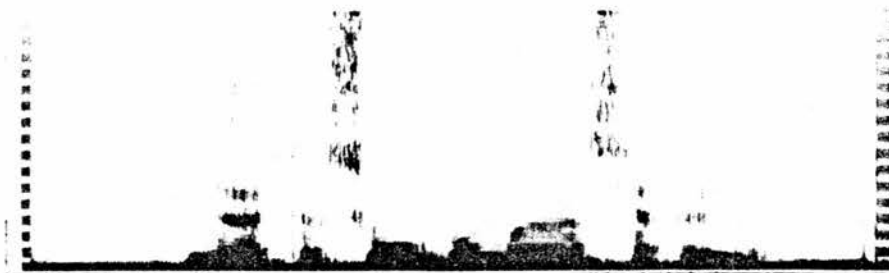
TYPE B/85 SONAGRAM 8 KAY ELECTRICS CO. PINE BROOK, N. J.



SPR.MH

, l a s u m h u m a s a p a l u

TYPE B/85 SONAGRAM 8 KAY ELECTRICS CO. PINE BROOK, N. J.



SPR.ALI

, l a s u m h u m a s a p a l u

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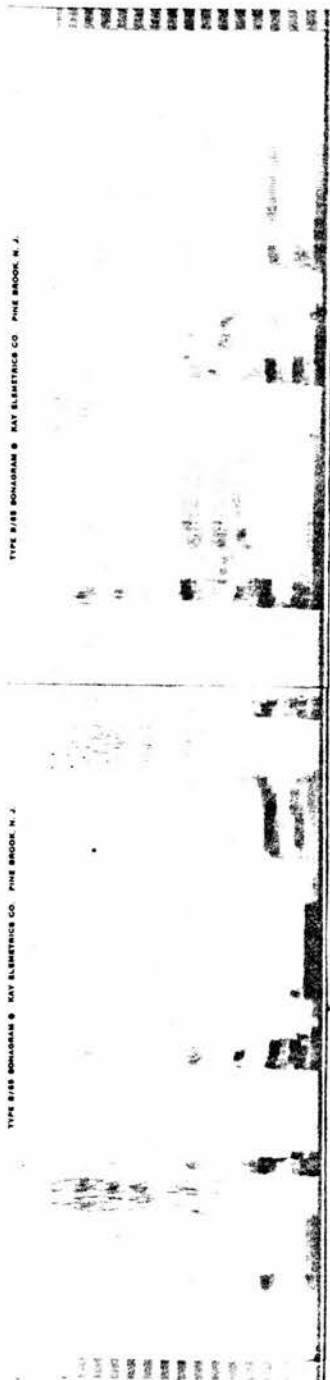


SPR.MAS.

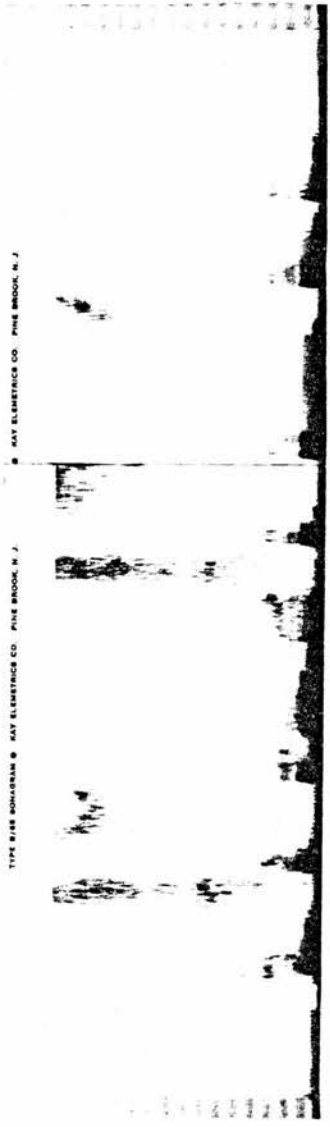
, l a s u m h u m a s a p a l u

WB 3 Kx  
500cps  
2cs

Plate 1



SRMALS  
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



SRMALS  
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



SRMALS  
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

WB 3Kx  
 1000cps  
 10/10 J=2ca

TABLE / 3/(cf. Plate 3)

Informant	ME.				ALJ.				MAS.						
Unit	hf.	hk.	sb.	wd.	fsl.	hf.	hk.	sb.	wd.	fsl.	hf.	hk.	sb.	wd.	fsl.
	C&V	v	Syl.		foot	C&V	v	Syl.		foot	C&V	v	Syl.		foot
11	100					100					070				
2	200		360			200		320			140		270		
3	120					100					090				
4	040	040					035					030			
5	160		360			100		290			120		270		
6	150					120						040			
7	090	050				040					040				
8		030					015					015			
9	130			560	<u>1320</u>	060			440	<u>1050</u>	080			470	<u>1010</u>
10	140					080					120				
11	280		430			160		300			240		360		
12	120					090					090				
13		040					030					030			
14	100					100					090				
15	200			620	<u>1060</u>	200	10		450	<u>0760</u>	130			500	<u>0860</u>
16	120					120					120				
17		040					040					040			
18	100					080					090				
19	200			600		160			460					540	
20	150					120					150				
21		050					040					050			
22	060					080					060				
23		020	360				025	320				020	360		
24	100					110					100				
25	200		300		<u>1280</u>	220			320	<u>1120</u>	200		300		<u>1200</u>

TABLE 4 (cf. Plate 4)

Informant	MH.					ALJ.					MAS.				
Unit	hf. C&V	hk. v	sb.	wd. Syl.	fel. foot	hf. C&V	hk. v	sb.	wd. Syl.	fel. foot	hf. C&V	hk. v	sb.	wd. Syl.	fel. foot
'b	090					090					090				
d		030					030					030			
l	120		250			120		200			120		260		
u	100					090					090				
a		035					030					030			
s	120					080					100				
i:	240			580		160			480		200			500	
ult	120					100					120				
'h		040					035					040			
th.	160		460		1220	140		340		1080	160		440		1200
'w	070					-					040				
d	070					060					120				
l		030				020						040			
a:	100					080					080				
?	200			600		160			460		160			560	
a	080					050					030				
a		025					015					030			
n	080					090					080				
a:	160			660	1220	180			500	1040	160			500	1030
'w	090					060					080				
d		030					020					025			
l	120		270			080		200			110		260		
w	090					060					080				
e		030					020					025			
a:	080					070					080				
a:	160			440		140			360		160			450	
d	080					070					080				
a:	160		320		1100	070		140		0860	160		260		1010

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SPERMIL, m ā: t a t f a ʔ a d, m ā: m a m ā: t u, h ā: t a l a d i:

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TYPE 8/88 MONOGRAM © KAY ELECTRICS CO. PINE BROOK, N. J.

SPRALL.  
 ʒ, m ʒ ɛ t ʃ a ʔ a d, m ʒ m ə m ʒ t u, h ʒ: ʃ a l a d ɛ:

RAY IT ELECTRONICS CO. TYPE B/WA BONGADAM # — WEISSER ELECTRONICS LTD. BOSTON, 02116 FAX (0272) 971454

RAY ELECTRONICS CO. TYPE B/VS SONAGRAM & — WESSSEX ELECTRONICS LTD. BOSTOL BS16 5NF (0272) 571404.

WB 8Kz  
500ps  
1/10 J-2cs

**SPR.MAS.**

$m \in \mathbb{Z} \setminus \{0\}$

### Figure 3



SPR. .III. , h a l n a s e l u m , w a l r ? a n a : w a l w i d a : d a :

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SPR. AL. J. , h a l n a s e l u m , w a l r ? a n a : w a l w i d a : d a :

KAY ELECTRONICS CO. TYPE B-15 SOMAGRAM © — WESSEX ELECTRONICS LTD BRISTOL BS16 5SE (0273) 511404



SPR. .IIS. , h a l n a s e l u m , w a l r ? a n a : w a l w i d a : d a : Plate 4



TABLE 5 (cf. Plate 5)

Informant	MH.					ALJ.					MAS.				
Unit	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot
a: tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr.	I20	040				090					030				
	I25					I00	030				080	010			
	250			560		200			490		I60			360	
	I10					I00					090				
	030	480				020					030				
	220					200		330			I80		350		
	I00														
	I30					I10					090				
	I90	045			890	I50	040	360	660		I20	030	330	680	
	I80		410			090					090				
		060					030				090	030			
	I30	045				095	030				090	030			
	I70			585		I40			440		I20			420	
	I00					I00					I00				
	200	300				200		300			200		320		
	I50					I20					I20			560	
	220				670	I20			540		I20				

. This hemistich can be produced following either one of two rhythmic Patterns. Thus, if the tonic begins on the the syllable /mi/ of the word /mi/ yah/ = a sort of walk, the hemistich reads as follows:

ma|ayna: /mi/ yatal /lai|ai = We walked the way a lion walks.

I040 I000 0700

0820 0800 0640

0710 0760 0640

However, if the tonic begins on /yatal/ = of the, this entails the neutralization of the stress element in /mi/, and the insertion of a silent stress, which makes the hemistich read as follows:

ma|ayna: mi/ / yatalaithi = We walked like a lion.

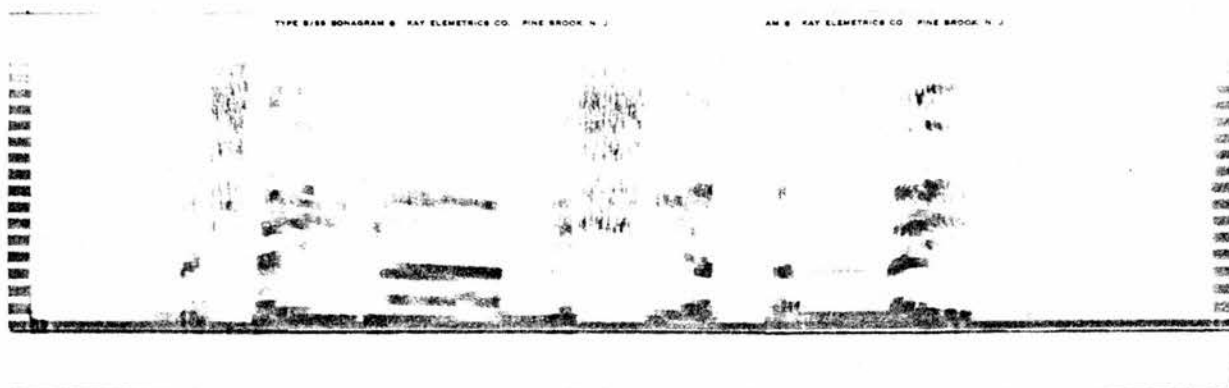
I450 I320

I180 I080

I040 I040

TABLE 6 (cf. Plate 6)

Informant	MH.					ALJ.					MAS.				
Unit	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot	hf. C&V	hk. v	sb. Syl.	wd. Syl.	fsl. Foot
a: tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr. tr.	I20					I00					040				
	240		360			200		300			080		I20		
	070					090					060				
		025				090	030				I00	020			
	I60			600		I80			420		200			470	
	320					070					080				
	I00						025					025			
	I60	035			I300	I00		240		980	I10		270		380
	I50		320			090						035			
		050					030				I30		320		
	200		420			I10		280			I20				
	I20					090						040			
		040				080					090				
	I00			520	0950	I60			410	700	I80			520	870
	210					080					I00				
	I00		300			I60		240			200		300		
	200					090					090				
	I00										I40		240		560
	200		300		0600			I80		460					



Spr.MH. m a f ə y n a : m i f y ə t ə l l ə y ə i.



Spr. ALJ. m a f ə y n a : m i f y ə t ə l l ə y ə i.



Spr.MAS. m a f ə y n a : m i f y ə t ə l l ə y ə i.

WB 8Kz  
500cps  
1/10=2cs

Plate 5

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SPR.MH.

, m a : l i s h a : b e n , n e f m i m a : n a : m a :

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SPR.ALI.

, m a : l i s h a : b e n , n e f m i m a : n a : m a :

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WB 8Kz  
500cps  
in 1/10 1=2cs

SPR.MAS.

, m a : l i s h a : b e n , n e f m i m a : n a : m a :

Plate 6

2:BL3 7 (cf. Plate 7)

Informant	MH.					ALJ.					MAS.				
Unit	hf. C&V	hk. v	sb.	wd. <u>Syl.</u>	fsl. foot	hf. C&V	hk. v	sb.	wd. <u>Syl.</u>	fsl. foot	hf. C&V	hk. v	sb.	wd. <u>Syl.</u>	fsl. foot
не кон оу-пре не кон к ебн ала р о б е н н и о к	090					I50					090				
	I20	030				200	050	430			I20	030			
	+ IO		280			+30					+IO		270		
	II0					I40					090				
		040					050					030			
	I50		320		0650	I40		350		800	I20		290		0560
	I40					I20					I00				
		050					050					040			
	I00					II0					090				
		040	320				040	230				040	350		
	I00						050				I00		040		
	I40		320		700	I40		370		700	I40		320		0680
	I20					II0					080				
		040					035					030			
	I50					I40					I20				
		050	440				045	430				040	320		
пре кон оу-пре не кон к ебн ала р о б е н н и о к	090					I00					090				
		030					035					030			
	I20		280		690	I40		300		720	I20		290		0650
	I60					I40					I20				
		055					050					045			
	090					090					075				
		030	380				030	380				025	320		
	I50					II0					II0				
пре кон оу-пре не кон к ебн ала р о б е н н и о к		050					040					040			
	I80		380		760	I50		310		760	200		350		0700

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*Spr.MH.*, k ə m m u ḍ , ḍ ə b i ḍ a r , b i k ə m i n , f ə r ə k i n

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*Spr.ALI.* , k ə m m u ḍ , ḍ ə b i ḍ a r , b i k ə m i n , f ə r ə k i n

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*Spr.MAS.* , k ə m m u ḍ , ḍ ə b i ḍ a r , b i k ə m i n , f ə r ə k i n

**WB 8 Kx**  
**500cps**

$\ln 10 = 2cs$

Plate 7

## G. DISCUSSION

On the evidence of the results of this study there are grounds for the belief that alFarahidiy, in his prosodic system, realized the details of the time-substratum underlying Standard Arabic, as codified in his basic - temporal and structural - notational units ( $C^V = 0$ ,  $C^VC = 0I$ ,  $CV := 0I$ ,  $C^VC^V = 00$ ) which have been proven in the course of this experiment to have the following contextual, durational loads:

$$C^V = [X + \frac{X}{3}]$$

$$C^VC = [X + \frac{X}{3} + Z], \text{ where } Z \text{ is } [X + \frac{X}{3}], \text{ i.e. } [2(X + \frac{X}{3})]$$

$$CV: = [X + 2(X)]^1$$

$$C^VC^V = [2(X + \frac{X}{3})]$$

It appears that his musical training led him to his precise quantification and systematization based on the basic hierarchy:

$$C \text{ or } V = /sa:kin/$$

$$C^V = /mutaharik/$$

$$C^VC, CV = /sababun Xafi:f/$$

$$C^VC^V = /sababun \theta aqi:l/$$

$$CV.C^V, C^VCC^V = /watadun mafru:q/$$

$$C^VCV., C^VC^VC = /watadun majmu:f/$$

$$\text{Foot} = /fa:silah/$$

---

<sup>1</sup> The quantity of CV: varies according to the phonetic quality of the potential. It is  $X+(X+)$  when it is borne on a chest-pulse that terminates a line.

It is appealing to investigate the relevance of the watad-constituents to the system on the plane of quantity. It seems not unreasonable to hypothesize that their inclusion in the system was not a haphazard thing. In the course of the experiment, it was found that the duration of the watad-constituents functions and varies distributionally in relation to the other rhythmic constituents before the next stressed constituent.

The rules governing the contextual duration of the watad units can be systematized on the basis of the watad-specific quality, and distributional (i.e. positional) quality; that is to say, in view of the stressed-unstressed quality of the watad, itself, and on the basis of its positional interdependencies within the boundaries of the foot (the circular time relations it maintains with the other constituents). These rules can be specified in the form of the following formulae:

- (i)  $(PG^{ST} + PG)FT = (X + 2X)^1$
- (ii)  $(CD^{ST} + PG)FT = (X + 2X)$

The first rule specifies that a foot (FT), which consists of two watad's (PG)'s, has a mathematical time-relation within the foot-boundaries, wherein the unstressed PG is borne on more or less twice the time-span for the stressed one. (Cf. Plate 5.) Such a phenomenon may be accounted for on the grounds of the opposition between the maximal, contractile, explosive power involved in the

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<sup>1</sup> To substantiate the rule requires further experimentation. This hypothesis can only be very tentative.

production of the stress-pulse, and the output of the non-explosive contraction which bears the unstressed PG.

The second rule specifies that a foot (FT), which consists of  $1(\text{CD}^{\text{ST}})$ , i.e. stressed sabab, and  $1(\text{PG})$ , i.e. unstressed watad, has a similar mathematical time-relation, wherein the unstressed (PG) takes up more or less twice the time-span necessary for a stressed (CD).

Having made clear the rules governing the distributional duration of the watad-constituents we may proceed to formalize the watad's rules, as follows:

The duration of a watad is a variable restricted by the quality of the neuromuscular movement underlying the output on which the watad-unit is borne, and by its sequential position within the boundaries of the foot, in proportion with the durational actualizations of the other potential outputs.

As far as timing is concerned, the system on the



practical level suggests that alFarahidiy formed some impressionistic idea of stress-timing. It is very likely that that impressionistic idea was reached through the perception of the interrelation between the rhythm of Arabic verse and rhythm in the Arabic homophonic music; and conversely the affiliation of rhythmic segmentation and patterning to music. In fact, despite the unfortunate absence of any theoretical literature on the concept of stress, per se, in the early Arabic linguistic tradition, except for alFarahidiy's definition of rhythm in Arabic by its musical characteristic, i.e. beat (MS.,140), the beat-initiated bar and its correlation with the foot is well dealt with in the Arabic musical and philosophical literature. (For examples of that realization, see Smith, 1843/9.)

Following the Stetsonian approach, which dates back at least to J. Steele (1779), our view of stress has

been detailed in (Area I, F.I.A.i). It follows from that that spectrography is not the most fully-qualified laboratory-technique to investigate the stress-producing, neuromuscular movement, albeit it is quite a useful technique in the investigation of certain acoustic stress-correlates. Contra Martinet (1962,27,35) and Potter (1957,63) who adopt the physicalist view that "stress may be measured by instruments precisely", we believe that so far there is no acoustic instrument that is capable of measuring stress, in spite of the fact that certain acoustic artefacts of the stress-factor can be read and interpreted.

The welter of the views in acoustics on which correlates are the most relevant to stress provides the support to the above view. Fry (1955,1958) took the view that the physical correlates of stress are duration, intensity, fundamental frequency and formant structure, and that the direction of a step in fundamental frequency is important, but not magnitude. Lieberman (1957) concluded that the higher fundamental frequencies and envelope amplitudes are the most relevant of the unidimensional correlates of stressed syllables, and that envelope amplitude is more important than duration. Bolinger (1958,149) came to the conclusion that "intensity is found to be negligible both as a determinative and as a qualitative factor in stress". Morton and Jassem (1965) concluded that variations in the fundamental frequency produce far greater effects than variations in either intensity or duration, and that in marking stress a raised fundamental

is more efficient than a lowered one. This welter of views brings us to the conclusion that experimentation into the problem will never be completed unless the physicalists return to the neuromuscular grounds of stress, and a priori attempt to find their correlates with reference to the stem and not to its artefacts. In fact, such an approach, which has its grassroots in the basic belief that stress is a physiological property, is by no means unconventional. Lehiste and Peterson (1959),<sup>1</sup> in their research, concluded that stress has at least four acoustic parameters - speech power, fundamental frequency, phonetic quality and duration - whereas, to them, laryngeal quality may contribute in a very secondary way. In this respect it is tempting to think of a set-up which combines:

- (a) bipolar electromyography,
- (b) volume-measuring instrument,
- (c) electrokymography, and
- (d) spectrography.

This digression, concerning the priority of the physiological entity of stress and the necessity for a combined physiological and physicalist approach to the investigation of stress and its correlates, provides the answer to why the spectrographic manifestations of stress have not been tackled in the course of the experiment.

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<sup>1</sup> For other representatives of the physiological view of stress, it is worthwhile to read Sweet (1878,263); L. Abercrombie (1923,13); R.M.S. Heffner (1949,224-5).

## H. SUMMARY

This experiment was designed to investigate the time-substratum underlying alFarahidiy's prosodic system, following the Abercrombian lemma that syllable quantity is relative to

- (i) the total length of the foot within which it occurs,
- and
- (ii) the quantity of the other syllables in the foot.

Spectrograms of seven hemistichs of different rhythmic patterns, spoken by three informants from the Asian Arabic-speaking area, were measured following

- (i) alFarahidiy's temporal and structural notation,
- and
- (ii) alFarahidiy's prosodic hierarchy.

In terms of the durational relations between the potential output-borne constituents and the foot constituents, the durational relations expounded by alFarahidiy were proven applicable to modern Standard Arabic. The time substratum may be codified as follows:

### A. FARAHIDIYAN

- (i) /sa:kin/ = C or V  
(never in isolation)
- (ii) /mutaharik/ =  $C^V = 0$

### B. MATHEMATICAL EQUATIONS

Contextual duration

$$\# [X + \frac{X}{3}]$$

(iv) /sababun θaqi'1/ —  $C^V C^V =$  #  $[2(X + \frac{X}{3})]$

Although one would expect the watad units to have similar quantities, if a simplistic and superficial look is cast on their notational values, it was found in the course of the experiment that the time-stretch of the watad-constituents holds a twofold interdependency with the other constituents within the foot boundaries. It holds a more or less two-to-one relation with any stressed sabab (CV:,C<sup>V</sup>C, C<sup>V</sup>C<sup>V</sup>); and it holds a more or less two-to-one relation with any stressed watad within the same foot boundaries.

(A) The watad constituent, in alFarahidiy's prosodic system, is referred to as a distinctive unit only within the context of the generative circles; that is to say, the placement of the generative

bars, where it is identified as a generative unit treated as one despite the likelihood of treating it as two; and not within the conclusion of the practical, segmentational procedure, where the foot is viewed as an integral unit, approached as a portion of a line contextually, a separate interval rhythmically, and a /taf<sup>c</sup>i:lah/ systemically.

The rules governing the watad-duration were found to be dependent on its distribution within the foot boundaries.

These rules can be specified as follows:

- (a)  $(1 \text{ PG}^{\text{ST}} + \text{PG}) \text{ FT} = \# [X + \{2X\}]$
- (b)  $(1 \text{ CD}^{\text{ST}} + 1 \text{ PG}) \text{ FT} = \# [X + 2(X)]$
- (c)  $(\text{IPG}^{\text{ST}} + \text{ICD}) \text{ FT} = \# [X + X]$
- (d)  $(\text{ICD}^{\text{ST}} + \text{IPG} + \text{ICD}) \text{ FT} = \# [X + 2(X) + X],$

where  $\text{PG} = \# [X + X].$

The evidence of the experiment suggests that the time-substratum underlying alFarahidiy's prosodic system was based on an overall, precise understanding, analysis and synthesis of

the very minutes of the contextual time-relations which exist in Arabic, beginning with the fixed and predictable relationship between the segments superimposed on the output of one single potential up to the constituents within the foot boundaries, which found their ultimate expression in the restrictive formula of the Arabic foot structure:

$$N \ L \ I \ (PG) + I \ (CD)^1 \quad \text{and} \quad N \ M \ I \ (PG) + 2 \ (CD)^{2,3}$$

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<sup>1</sup> Unless the foot is line- or hemistich- terminal.

<sup>2</sup> 2(CD)'s are usually equated as I (PG).

<sup>3</sup> The order of the constituents is non-positional.

3

*The Arabic Script  
And  
Al-Farahidiy's  
Phonetic  
Restoration*



A. EPITOME

In this area we start with a few prefatory remarks on our view of the unintelligibility of any legacy whatsoever without reference to a wider background, which happens to be the Greco-Syro-Mesopotamian region in the third area of alFarahidiy's legacy. Within this context a brief survey of the development of writing in Mesopotamia and Syria is attempted, with major emphasis laid on the Ugaritic script, which we believe bridged the transition from the puriconic<sup>1</sup> cuneiformal logogram of Mesopotamia to the simplified phoniconic<sup>1</sup> figurae of the Semitic and Early Greek scripts.

On the score of the belief that the principal common denominator between the Ugaritic script and all other East Mediterranean scripts lies in the principle of phonetic iconicity and the process of simplification and economy, the phoniconic elements in the Ugaritic script and the simplificatory operations which we assume governed the development from the transitional bridge to the other East Mediterranean scripts, are discussed. With this identification of the scriptological root to which the Arabic script indirectly belongs, we proceed to a discussion of

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<sup>1</sup> Cf. pp.186-7.

the representation of the first level prosody, i.e. pharyngealization, in both the Ugaritic and the Arabic scripts.

Following the ascertainment of the phoniconic bases of the East Mediterranean scripts which have been consigned to oblivion due to a series of simplificatory processes, we turn to the early stage of the development of diacritization in Arabic - the Circular Diacritization Method - which we term as Embryo-Diacritization; and we peer into the extrinsic and intrinsic deficiencies of the Duʿaliyan diacritical method in the prelude to alFarahidiy's restoration of the phoniconic principles which lie hid underneath the surface of the East Mediterranean scripts, which we term in the course of our study as the Prosodic Diacritization Method.

As with all researches of historico-analytical perspective, it has been selected to investigate alFarahidiy's parentage of the current Arabic diacritical system and the conventions which underlie the figurae themselves as well as their designation as exposed by traditional writers on the subject. However, before entering upon our phonetic view of the Farahidiyan conventions and what information they transfer to the written text, an attempt is made to dichotomize certain descriptive terms regarding phonetic iconicity and analphabeticity.<sup>1</sup>

<sup>1</sup> Analphabetic is not used in its traditional sense as opposed to alphabetic. Rather, it is used in effect to denote a descriptive label for a prosodic operation in abbreviated form. An analphabetic symbol or composite of symbols are an indication of the ingredients of the prosodic process to be implemented. The ingredients being the prosodico-phonematic operations which are required to transform the written form of the text into a form approximated to the spoken one.

As far as the analytical side is concerned the terms we adopt here have their roots in the Abercrombian and Firthian terminologies.

Finally, the curtain is drawn on this area of alFarahidiy's legacy by a conspectus of the general characteristics of his prosodico-phonematic contributions to the Arabic script.

#### I.A            PREFATORY REMARKS

In the preceding investigations of the first two areas of alFarahidiy's legacy we have discussed and established the rigour of the Farahidiyan prosodic approach as applied to Arabic verse structure and the time-substratum underlying his prosodic system. It has been termed prosodic in terms of the multidimensional and polysystemic procedural, prosodic analysis it follows in the determination of the rhythmic types from hierarchic constituents and the synthesis it follows in the generation of the rhythmic patterns; and Farahidiyan in as much as the process of systematization is concerned, with the salience of two paramount reservations:

(a)    The Farahidiyan legacy could never have been the scratch line, but it should have originated in a long, previous and cumbersome tradition of linguistic thinking - e.g. the invention of the first writing system proper, the bilingual dictionaries of Akkad (3rd millennium B.C.) and Ugarit (2nd millennium B.C.) - restricted by the light available to his forerunners who put down to writing the

ancient Babylonian epic of the Flood - Atra Hasis - (Lambert and Millard, 1969) some thousand years earlier than Ashurbanipal of Assyria, during the reign of Ammi-Saduqa of Babylon, the great grandson of Hammurabi; and who probably had their heyday in Sumer and Akkad in the 4th millenium B.C.

(b) It is meaningless to consider his legacy in separation from the perspective of human history, which is reckoned to have commenced its consistent and distinctive stages in the crescent which extends from Eastern Arabia (cf. Oates, 1976, 1973; Masry, 1974; Burkholder, 1972; Kapel, 1967) to North Syria (Schaeffer, 1936) through the cradle of human civilization in its hinterland, Mesopotamia, from at least the 5th millenium B.C., if not earlier. Nevertheless, it should be emphasized before proceeding any further that although this crescent acquires its prominence from its precedence in the evolution of the urbanized human species, it can never be viewed but as part of it, and not as something exclusive and distinct from the later stages of the species with which it shares the species' representation.

In principle, the view of the development of human history in recognizable, overlapping and continuous stages, provides the grounds for our discussion of the development of writing in the Syro-Mesopotamian region which we have yet to lay hand on in the prelude to the Farahidiyan restoration of the principles which underlie the superficial crust of the figurae which were invented

and developed in the East Mediterranean area in the 2nd millenium B.C. as manifested in this area of his legacy. By describing the development of human history as overlapping and continuous we mean that continuity takes the form of pyramidical development in which each layer is made up of horizontal planes which overlap one another to form a layer, i.e. an evolutionary stage which, as soon as its stamina reaches the period of extinction, bequeathes its contributions to another plane within the same layer, or to another layer within the pyramidical sequence, where it is either fossilized or corrupted or enriched by the following plane or layer.

#### I.B GENERAL SKETCH

The next step in our study of alFarahidiy's legacy is to attempt to rediscover the chronology and the principles underlying the invention of the figurae that flourished in the East Mediterranean region, re. phonetic iconicity.

For this preliminary survey certain operations suggest themselves:

- First: We may start with a brief historical survey of writing in Mesopotamia and Syria.
- Second: We examine the most qualified candidate to bridge the transition from the puriconic cuneiformal logogram of Mesopotamia to the phoniconic alphabet of Greece.

- Third: We may search for authenticative evidence in the most qualified candidate to lay solid grounds for the principle of phonetic iconicity in script and to illuminate the possibility of deriving the Semitic and Greek figurae from that prototype, or the descendant nearest to the prototype.
- Fourth: We may trace back to the source some of the Greek and Arabic figurae to find out whether they are related to the prototype or not.
- Fifth: We may proceed to a discussion of what we assume governed the development from the prototype to the offshoots and a priori blurred the line of descent.
- Sixth: If the preceding operations succeed in providing further proof of phonetic iconicity in the prototype we may find ourselves in a position to pass over from the very general to the very specific - that is to say, from the general attitude of considering the Arabic script as phoniconic in terms of the prototype to the phonologically prosodic. It follows from this that we may be able, in a survey of the first level prosody, to identify by analogy with the specimens already identified, the prosody of pharyngealization.
- Seventh: We may briefly survey the pre-Farahidiyan attempt to reform the Arabic script by the introduction of dotation and circular diacritization. After having illuminated this point we go ahead to scrutinize the extrinsic and intrinsic deficiencies of the Du?aliyan method.
- Eighth: We move to the flesh of our investigation, i.e. the Farahidiyan restoration, for the substantiation of which we proceed as follows:
- (A) Authentication of alFarahidiy's parentage of the Prosodic Diacritization Method.
  - (B) Authentication of the signs he improvised on the phonematic and prosodic levels.
  - (C) Authentication and investigation of the Farahidiyan conventions as exposed by traditional writers on the subject.
  - (D) Dichotomization of the Farahidiyan signs.
  - (E) An analytical phonetic view of what conventions the signs transfer to the written text.



- (F) Taxonomization of the Farahidiyan signs.
- (G) Tabulation of the Farahidiyan signs and conventions.

Ninth: We may attempt to illuminate the Greco-Farahidiyan connection and conclude with the general characteristics of the Farahidiyan sign-system.

Before we endeavour to carry out this plan of investigation there arises the necessity of re-introducing our view of phonetic iconicity. It has been remarked that:

*Iconicity, as a technical term, is used in its semiotic sense, as derived from 'icon' to which C.S. Peirce (1932, II) ascribed the definition, 'a representamen whose representative Quality is a Firstness of it as first'. In other words, it is a non-arbitrary, intentional sign, or designation which bears an intrinsic resemblance to the thing it designates. A priori, phonetic iconicity in script refers to the intrinsic resemblance between the designated figura and the articulatory posture or a subfeature of the posture involved in its potestas.*<sup>1</sup>

(Sa'adeddin, 1977)

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<sup>1</sup> It is very rewarding, for an understanding of the theory, to read Abercrombie's works on notation and the phonetic side of writing, especially: Chapters 1 and 7 in his "Elements of General Phonetics" (1967); "What Is A Letter" (1949); "Forgotten Phoneticians" (1948); "Writing Systems" (1937); and "Isaac Pitman" (1937) - all reprinted in his "Studies in Phonetics and Linguistics" (1965); as well as his succinct and lucid introduction to his "English Phonetic Texts" (1964). It is also rewarding to read amongst other works Cajori's "History of Mathematical Notations" (1928, 1929); Bell's "Visible Speech" (1867); Sweet's "Phonetic Notation and Phonetic Alphabets" in Henderson's "Indispensable Foundation" (1971); Bulwer's "Philocephus" (1648); Wilkins's "An Essay Towards A Real Character" (1668, xiv, 378-89); Pike's "Functional Alphabetic Symbolism" in his "Phonetics" (1943); and Paget's "Human Speech" (1963, XIII, 251).

It has also been remarked that:

*In an iconic criterion, the scripts of the East Mediterranean area (including the Greek alphabet and the offshoots that followed from it) and of its hinterland, Mesopotamia, are fundamentally of two different types. In the one case, they comprise descriptive representations of the objects they stand for, irrespective of whether this representation is 'primary', skeletal, or 'associative' (cf. Gelb, 1952). This type, we term pure iconic, or puriconic, for short. In the second case, the signs are phonetic, reflective representations of one feature or another of the postures assumed by the articulators in their production, as far as the theoretical preconceptions and accuracy of observation of their designators allowed them. For this type, we coin the term, phoniconic. Egyptian hieroglyphic and what is termed as Sumerian pictographic are examples of the first type, and Phoenician and Aramaic may be taken as examples of the second type. The preceding dichotomy brings us into paradoxical agreement with Driver (1954), Diringer (1962, 1968), Gelb (1952), and Jensen (1925). It is something of a paradox because although we are in complete agreement with them on the entity of the picture in embryo-, pictographic and hieroglyphic writing, we are in diametrical opposition with their views and the views of the acrophonecists (e.g. Sethe, 1939; Dunand, 1945; Gardiner, 1942; Albright, 1948); and the geometricists (Flinders Petrie, 1912; Gaster, 1940) on the entity and development of the picture in the second type.*

(Sa'adeddin, 1977)



After having made clear our view of phonetic iconicity in script we may now make the attempt to enlarge our field of vision by carrying out our plan of investigation. We were to start by a brief survey of the development of writing in Mesopotamia and Syria in the hope of identifying the most qualified candidate to bridge the transition from the puriconic logogram of Mesopotamia to the phoniconic alphabet of Greece via the quasi-alphabet of Phoenicia.

It may be observed, however, that in this part of our work an attempt is advertently made to avoid as far as possible the use of ethnic denominations, and to stick to linguistic and geographical terms on account of the fact that in our present state of knowledge we are reluctant to reject or accept certain suspended arguments of whether, say, the Sumerian civilization antedates the Akkadian civilization or vice versa or whether they were contemporaries (cf. Jacobsen, JAOS 59, 1939; Moscati, 1959, 44-75).

It has been suggested, not only by Assyriologists but by Egyptologists as well (cf. Frankfort, 1956; also see Gelb, 1952), that there are grounds for the belief that writing first became established in Mesopotamia, but soon spread to Egypt by older Babylonian colonization (Hommel, 1904, 113) or idea diffusion (Scharff, 1942). Whatever the case, our aim in

this section is not to determine whereabouts writing originated but to introduce a concise survey of the development of writing in Mesopotamia and Syria in general.

If one surveys the whole period during which writing in Mesopotamia and Syria is known to us through archaeology, it may be divided into a series of developments which overlap one another, the most distinctive of which are the following stages:

- (i) the Mesopotamian Stage; and
- (ii) the Syrian Stage.

#### 2.A.i The Mesopotamian Stage

The Mesopotamian stage may be divided into three periods, the second of which may also be divided into three sub-periods:

I. The Stone, Linear, Primary, Picto-logographic Period  
attested by the German excavations from the archaeological period, Warka IV, ca. 3700 B.C., where 1600-1800 linear logographic inscriptions on stone were discovered (Thureau - Danguin, RAAO, 1927, 23ff.; Burrows, 1935; Falkenstein, 1936). Similar stone inscriptions were also excavated at Kish, Jamdet Nasr, Ur and Fara (2600-2500 B.C.).

As far as this period is concerned the linear logograms might be considered as skeletal in the sense that, although they are once removed from the pictographic stage they are still, more or less, recognizable reproductions of objects.

2.     The Clay, Cuneiformal, Logographic Period (ca. 2500 B.C.) attested by the archaeological finds at Lagash (cf. Oppert, Chapter 5, 1859; Delitzsch, 1897; Barton, BASS, IX, 1913).




























This period may be divided into the following sub-periods:

- (a)     A cuneiformal, primary representational, logographic sub-period which overlaps with the end of (1) and the beginning of (b).
- (b)     A cuneiformal, associative representational, logographic sub-period, demarcated by the reduction of signs to 800. Practically, this sub-period may be reckoned to be the period of solid conventionalization.
- (c)     A cuneiformal, abstractive representational, logographic sub-period, which might be considered as a stylized extension of (b). Nevertheless, the end of this sub-period would be identified by the designation of certain logograms which acted as differentiatory determinatives - something which demarcates the beginning of the transition from the purely logographic to the syllabo-logographic.

3.     Round about 2000 B.C., as may be deduced from the Cappadoecian tablets discovered in 1881 (cf. Ebert, 1927-28, VI, 213f; Friedrich, 1954, 34), the era of Old Assyrian began, where writing was carried further into the syllabary age.

In this developed and stylized script, the following distinctive characteristics came to be very noticeable:

- (a) Only about a hundred syllable signs and a few logograms are in use.
- (b) The signs are divided from each other by dividing lines.
- (c) As against the Early Babylonian, the signs have become more rectangular and symmetrical. However, the syllable-signs still reflect an abstractive form of their logographic origin.

Ancient Logogram gram I	Old Babylonian Cuneiform Script	New Assyrian Cuneiform Script	Meaning
			Bird
			Fish
			Donkey
			Ox
			Sun Day
			Wood
			Plough
			Boomerang
			to go
<b>DEVELOPMENT OF FORMS DOWN TO THE NEW ASSYRIAN SCRIPT</b> Oriental Institute Photo 27895 (after A. Poebel)			

Illus. 17.

One would speculate that the Assyrian script remained in vogue for about five centuries after the Cappadoecian tablets, until other scripts gradually brought to an end the dominance of the originally-puriconic series of scripts by the invention of a far more simplified form of writing, i.e. the phoniconic script. However, it should be borne in mind that the phoniconic script could not have driven the last descendant of the puriconic age out

of currency so easily. It certainly needed time for conventionalization and stylization, as well as a stretch of time to catch on and drive the ancient scripts back to their priestly, priestly-scribal and scribal walls where they survived until ca. 600 B.C.

## 2.A.ii      The Syrian Stage

Fifty years of excavations, decipherment and study have added centuries to the history of phoniconic writing, which seem to have provided the missing link element, or rather a fully-fledged descendant of the missing link element in the East Mediterranean, thanks to the accidental find in 1928 by a local peasant of a subterranean tunnel in the village of Ras Shamra (the ancient Ugarit, as mentioned in a letter from Mari, (cf. Dossin, 1937,19 ; Parrot, Syria, xviii, 1937,74) to the north of Latakiya (ancient Loadicea, Arabic: laḏīqiyyah) in North Syria, which entailed the systematic excavations by F.C.A. Schaeffer, G. Chenet and Ch. Virolleaud, and the epoch-making discovery of 800 tablets, including the "earliest alphabet yet known" (Schaeffer, 1936,35) "on tablets of baked clay as used in Chaldea from the earliest times".

The decipherment of the Ugaritic alphabet posed no crucial difficulties; and a few months' time after the publication of the first finds at the beginning of 1930 by Virolleaud, following

the combinational method and proceeding from the assumption that the question of the texts was that of a Semitic language, Bauer (OLZ, 1930,1062), Virolleaud (Syria XII, 1931,15f.), and Dhorme (Rev. bibl. 39,571f.) managed to relate definite phonemic values to the cuneiformal signs. Besides the above scholars, Montgomery (1933,1934) contributed to the mythological texts which, according to Gordon (1971,123) were in circulation "in Palestine before the Hebrew conquest".


If one looks at the Ugaritic script very closely one is at once struck by the following external distinctive features:

- (a) The simple morphology of the signs;
- (b) The system of the script and order of "isolates" (Abercrombie (1937), (1965,89)), in their "size" and "generality", generally follow the accepted order of isolates in the other Semitic scripts (cf. the tablet discovered by Schaeffer in 1949, re. Eissfeldt, 1950; also see Albright, BASOR, 118, 1950,12-4 and 119, 1950,23-4; Speiser, BASOR, 121, 1951,17-21).
- (c) The number and phonetic entities of the isolates point in the direction of ancient Arabic on the score of the fact that the isolates amalgamated with other isolates in the North Semitic, but preserved in Arabic, coincide with the Ugaritic inventory.
- (d) The external, cuneiformal outlook and the representation of vowels<sup>1</sup> (cf. Montgomery and Harris, 1935,15-6; Gordon, 1965,17-35) point in the direction of the Old Babylonian cuneiform.

<sup>1</sup> It has to be remarked that all Arabic dialects, unless the item is re-introduced from modern Standard, always monophthongize all diphthongs with /u/- and /i/- ending. This makes the vowels more similar to the Ugaritic vowel system which lacks diphthongs. Hence,

/maut/---- /mɔ:t/ = E. death                      /saif/ ---- /sɛ:f/ = E. sword  
 /daur/---- /dɔ:r/ = E. turn                      /mail/ ---- /mɛ:l/ = E. inclination;  
 whereas, /θaurah/ = E. revolution, remains unchanged, whilst /θaur/ = E. Ox, becomes /tɔ:r/ in Damascus, /tɔ:r/ in Cairo, and /θɔ:r/ in Arabia.



- (e) The wedge word-end-marker, , manifests the Babylo-Assyrian syllable- and logogram-divider.
- (f) The abundance of tablets with the rightward direction of writing could be considered as an imitation and extension of the Akkadian tradition which was in use in Ugarit, whereas the number of tablets with the leftward direction would very probably depict a transitional stage towards the more extrinsically-simplified Semitic scripts.
- (g) The size and generality of the isolates, as well as the intrinsic morphology of the figurae, constitute a radical move to emancipate writing from the complexities and sedimentations which presumably resulted from the over-extension of the Mesopotamian writing beyond its potentials by the amalgamation of the logographic with the syllabic due to the requirements of extending the Sumerian script to cover the Akkadian language, and also due to the diffusion of literacy outside the walls of the pagan temple as may be certified by the find of merchants' account books at Ugarit (cf. Thureau-Dangin, Syria, 1934,137).



Extract from the account book  
of a merchant dealing in purple-dyed wool. Schaeffer, 1936,  
Pl. XXV.

Illus. 18.

On account of the extrinsic and intrinsic evidence of the Ugaritic script which in our present state of knowledge<sup>1</sup> may be

<sup>1</sup> It is noteworthy that while this part was in preparation, it was announced that an archaeological expedition managed to dig out 25000 tablets in the vicinity of Aleppo in North Syria, and that those finds would reconstruct the history of the ancient Kingdom of Ibla. For preliminary notes, see Gelb, I.J. (1977), and the review of his work by Ullendorff, E. (1978).

reckoned to have bridged the transition from the Mesopotamian stage to the East Mediterranean stage, we may bring to an end our concise survey of writing in Mesopotamia and Syria, leaving the other chapters, for the meantime, to Taylor (1883-1899), Diringer (1943, 1968), Gelb (1952), Daly (1967), Ullman (1969), with the emphasis laid on the principal characteristics of the second revolution in the history of writing, i.e. the Ugaritic quasi-alphabetic system - the first revolution being the phonetization of pictography, or rather the stage of logographization in ancient antiquity, and the third being the Greek alphabetization (cf. Daly (1967), Wellisch (1978)).

(i) The simplification of the sign although it still bears the outlook of the cuneiformal Babylonian script.

(ii) The quantitative reduction of the signs by a brand new approach to the size and generality of the isolates, which led to the representation of consonants and long vowels only.

(iii) The qualitative transformation of writing from the puriconic age to the phoniconic era.

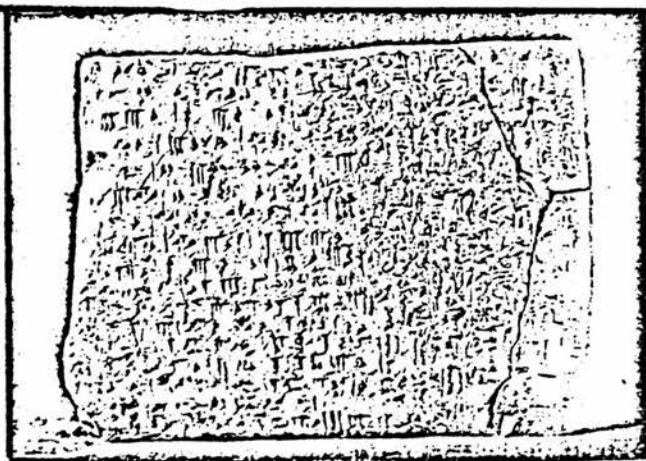
𐎀	(a)	𐎁	m
𐎁	(e, i)	𐎂	n
𐎂	(u)	𐎃	s
𐎃	b	𐎄	š
𐎄	g	𐎅	ʿ
𐎅	d	𐎆	g
𐎆	h	𐎇	p
𐎇	w	𐎈	ʔ
𐎈	z	𐎉	z
𐎉	h	𐎊	q
𐎊	h	𐎋	r
𐎋	l	𐎌	š
𐎌	y	𐎍	z, d
𐎍	k	𐎎	l
𐎎	l	𐎏	l

The Ugaritic alphabet after Jensen, 1958, Fig. 8I.

Illus. 19.



Having thus distinguished and identified the Ugaritic script within its geographical and formal context as, strictly speaking, the nearest descendant of the proto East-Mediterranean script, if not the prototype, bearing in mind that the Ugaritic inventory of phonemes dates back to 1500-1400 B.C., whereas the dating of the oldest Phoenician inscriptions has been lowered to 1000 B.C. (cf. Albright, JAOS, 1947; Gelb, 1952, 275), we may now proceed to (3) in our plan of investigation since (2) has been covered within the course of the Syrian stage.



Illus.20. The first alphabetical tablet discovered at Ras Shamra, Schaeffer, 1936, Pl. XXIV.



Bilingual dictionary giving lists of words in Sumerian and their translation in an undeciphered language related to Hurrian, *ibid.*, XXV  
Illus.21 .



Illus.22 .

The Ugaritic Alphabet

After Gordon, 1965, 299 .

Since the discovery of the Ugaritic quasi-alphabet, several attempts have been made to relate it to one or another of the old scripts. Bauer

undertook the attempt to show the Ugaritic figurae to be cuneiformal transcriptions of the Phoenician script.

(cf. Bauer, (1937,38)); Ebeling (1934,193f.) tried to force the Egyptian syllabic script and the Sumero-Babylonian on it; Fevrier (RES., 1934,2, XIII f )

endeavoured to link it with South Arabic; Olmstead (cf. Sprengling, OIC, 12, 1931,57f ), Gaster (PEFQS, 67, 1935,135), and Rosenkranz (ZDMG, 92, 1938,178f) attempted to attach it to the Sinaitic script.

It is of little practical use, however, to discuss the points of strength and weakness in the works of the above scholars, within the time- and space-limit of the present thesis. Nevertheless, it seems to

Ugaritic	Phoenician	Phonetic value
		g
		h
		s
		z
		e

The development of the Ugaritic script according to Bauer,1937, 38f.

Illus. 23.

Ugaritic	Sinai script	Phonetic value
		p
		b
		q

The development of the Ugaritic script according to Rosenkranz, 1938,178.

Illus.24.

me that before we cross the Rubicon to the region of phonetic iconicity where we introduce an overview of the phoniconic elements in the Ugaritic script,<sup>1</sup> three primary points have to be accentuated:

(I) One should lay a very clear distinction between the historical relations amongst nations at a certain time and the principles underlying a certain innovation; that is to say, the antecedence of the Egyptian and Mesopotamian syllabaries, which we assume were well known to the inventor or inventors of the Ugaritic script as attested by the reconstruction of the history of Ugarit (cf. Schaeffer, 1936, Ch.I, 1-32), should not be mixed up with the principles underlying the morphology of the figurae and their designation.

(II) It is a reverse of the development of writing to try to derive the cuneiformal Ugaritic script from a later linear script, the Phoenician or the Southern Arabian, at the time the latter can be proven to be stylized and simplified extensions of the former.

(III) It is high time to discredit once and for all the assumption that the designation of the figurae in the way the

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<sup>1</sup> A study of "Phonetic features in cuneiform and papyrus", and a study of "The mythological relations between Ugarit and Greece" are in preparation.

Ugaritic or Phoenician were systematized and graphically represented was the child of acrophony, because such an assumption is hard to believe if it is balanced with the cultural achievements of those predecessors of mankind; and once we emancipate ourselves from the complex of acrophony, we may be in a state of mind to accept that at least the vocal tract was closer to those who contributed to the development of mathematics, astronomy and architecture, than the camel and the house.

This position poses the question of the nomen used to indicate the figurae. In fact, the diversity of the nomen used to indicate the potestas in the Semitic languages and Greek, despite their preservation of the first segment as a representative of the potestas, would very probably vote in favour of the suggestion that the nomen were introduced in the wake of the potestas-graphic representation. Otherwise it could not have been possible to come across the following nomen:

Ugaritic	:	/be/
Greek	:	/beta/
Arabic	:	/ba?/
Hebrew	:	/bet/

In actual fact acrophony, as applied to that advanced stage of human history, can only be described as a biased attitude taken by the posterity towards the anteriority, which has always

taken the form of underrating their contributions - something which has always deprived the antecedents of ours from their own right in rehabilitation.

Placing ourselves at the standpoint of the inventor(s) of the Ugaritic quasi-alphabetic system, whoever he was or they were - our analytical pilot is a study of the figurae - we may carry out a reconnaissance of our mission in the following way:

(i) Our task is to provide a reflective representation of the articulatory postures, so to speak, involved in the production of the phonemes which we have observed in the course of our investigation of the given language. The question, then, is to provide the simplest and most convenient method as opposed to the complexities of the Egyptian and Babylonian syllabaries.

(ii) Having thus identified what we intend to represent we may pass over to the method of representation.



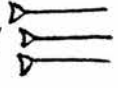

The articulatory posture in the oral cavity may be described in terms of what we reckon to be the place of articulation and the degree of closeness of the tongue to that place; that is to say, the degree of stricture. Proceeding from these two major points we may carry on to analyze each phoneme in view of those two criteria.

(iii) At this point of analysis we may be inclined to begin the synthesis of each figura on account of what we, as much as our light allows us, take to be the constituents of the posture involved. However, logic or intuition may guide us to put off the attempt until we have improvised a compact method of graphic representation.

(iv) On further inspection of the articulatory posture - we are still in the boots, or rather the sandals, of the inventors - we observe that, theoretically speaking, we may divide the perpendicular parameter in the oral cavity into three horizontal parallels on account of the position of the tongue at the time the posture is being assumed. As a matter of course we obtain three degrees of closure:



- (a) complete,
- (b) intermediate,
- (c) open.

(v) However, the material we have to use, i.e. the stylus and clay, restricts our full representation of the oral cavity and the lips. To unravel this problem we may straighten out the shapes and abstractively identify the major characteristics of the postures, as far as our theoretical preconceptions lead us, by the direction of the cunei-base. On that account we use ► with the cunei-base to the left to represent the tongue position in

connection with the upper longitudinal parallel, i.e. the roof of the mouth, and the lower longitudinal parallel, i.e. the floor of the mouth;  with the cunei-base facing the upper parallel to represent a complete closure, i.e. a stop, which we may also use as a word-divider, which we use to indicate the stoppage of the articulatory meaningful units; and we designate an oblique rightward cunei-based marker to represent a pharyngeal or a phoneme with a pharyngeal connection, thus  . It follows from this that we are in a position to represent /h/ by  and /a:/ by  .

(vi) After having solved the problem of the perpendicular parameter, we have to cope with two other problems:



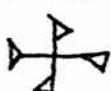


- (a) the different places of articulation; and
- (b) the different manners of articulation which, within our understanding, are degrees of openness and closure.

To unlock the first problem, we intersect the longitudinal parallels by three vertical parallels, apart from two frontal wedges to represent the lips. By this solution we solve the second problem; that is - the number of the wedges on the perpendicular parallel stands for different degrees of stricture. A priori we are able to represent / j / by the sign  and / z / by the sign  <sup>1</sup>. Concurrently, the place of articulation is represented by a wedge or a number of wedges

<sup>1</sup> It is to be remembered that when the base of the cuneiform points to the roof of the mouth, it indicates complete closure, whilst the representation of close approximation may be carried out by two wedges on top of one another on the perpendicular parameter.



where the vertical parallel and the longitudinal parallel form an angle of a perpendicular plane.

(vii) Now, we may turn to the problem of the pharyngeals and the oro-pharyngeal (the term is derived from the sign for the voiced uvular stop). On account of the position of the pharynx in its geometrical relation with the medial longitudinal parallel we may represent a pharyngeal, and what we believe to have a pharyngeal connection, by a slant wedge with the base in the direction of the pharynx. However, whenever symmetry requires, the wedge may be straightened up. In such wise, we represent /f/ by  or , /h/ by , and /q/ by  or .

This preliminary investigation of some phoniconic features in the Ugaritic script enables us to see how the later East Mediterranean scripts developed from the prototype. Nevertheless, our vision may be blurred if we do not take into consideration a clear view of what seems to have governed the course of development.

### 3.A.i Development of the Post-Ugaritic Scripts:

The development of the later forms which, on the face of the figurae appear quite alien to the prototype, we presume has come about after a process of simplification which included one or more of the following simplificatory operations:



(A) Simplification by deletion of cuneiformality and adoption of the peripheral outline of the cuneiform, or by erasure of parts of the proto-figura. This simplificatory operation may well be observed in the following chart.

IPA	UGARITIC	PALES.	PHOE.	E.GRE.	ARAM.	E.HEB.	SYR.	ARAB.	S.ARAB.
/j, g/									
/a: /									
/q/									
/t/									

Development by deletion of cuneiformality

Illus. 25.







(B) Simplification by reduction and ramification:

In this simplificatory operation, simplification is brought about by making certain signs redundant and by the ramification of one sign through the introduction of differentiatory markers, e.g. dots. In Arabic, for instance, the topmost denominator in , , and (from Bauer, 1937, pl.xiii) was very probably selected to represent /-j / , /t / , and /x / , prior to the dotation-stage.

(C) Simplification by re-allocation:

In this operation the figurae are emptied of their original phoniconic connotations and re-allocated to denote a

different phonetic content due to the redundancy of the original phonemic content in the system of another language and the need for another figura to designate a different phoneme.

UGARITIC	(IPA)	PHOENICIAN	(IPA)	E.GREEK	L.G.
	h		h		Ε
	q		q		Ο

Development by redundancy and re-allocation

Illus. 26.

(D) Simplification by amalgamatory re-allocation:

In this process certain figurae are re-designated to act as dual phonetic functors. In effect, the realization of this factor would very likely puzzle out how, under the influence of the Egyptian syllabary, the post-Ugaritic scripts came to abandon the visual differentiation between two of the so-called "three alephs", and the central approximants: / w / and / y / ; and to re-allocate the simplified forms of the approximants and / a:/ to represent certain contoids and vocoids at the same time; a hotchpotch, mixed up by the process of sacrificing the features of phonetic iconicity in favour of simplification and symmetry, which had to wait for the Greeks in their alphabetization and alFarahidiy in his phonematio-prosodic method to disentangle. Hence, the simplified form of /a:/ came to stand for a glottal stop,

a long vowel, a combination of both, and a glottal stop + a short /a/ ; the simplified form of / w / to represent either a voiced bilabial central approximant or a long close back rounded vowel / u:/ ; and the simplified form of / y / to indicate either a voiced palatal central approximant or a close front unrounded vowel / i: / . In fact, this process of simplification gave occasion to classify the East Mediterranean scripts amongst the syllabaries (cf. Gelb, 1952,147-153). And in the light of this background, we become in a position to see how alFarahidiy came to rejuvenate the principles underlying the earliest known, quasi-alphabetized script in his phonetically-based contribution to the Arabic script.

(E) Stylization and calligraphic development:

In view of the preceding precautionary view of the general conditions which, we presume, governed the development of the post-Ugaritic script, it becomes clear why several researchers in the field have not succeeded in realizing that it was no accident that the prototype became extinct and the offshoots became prominent, and why the prototype contained signs which in the later

"Phoenician and Hebrew were amalgamated with related sounds, but are kept separated in Arabic"































(Diringer, 1968, i,152);

and simultaneously we may be able to understand why, amongst other reasons, a number of researchers failed to realize how the Arabic

script developed on more or less the same lines which other Semitic scripts followed with the major difference between one script or another lying in the extent to which the appliers carried the simplificatory operations in favour of symmetrical and morphological simplicity of the figurae.

This conclusion on the general development of the post-Ugaritic scripts in the area where the Ugaritic language was to a very great extent incarnated morphologically and phonologically - by evidence of the script and the reconstructed morphology - in Ancient Arabic as standardized by alFarahidiy's school at alBasrah which had its model in the speech of the Arabs in the wastes of Najd, Tihamah and alHijaz, which provided the sheltered area for the nearest descendant to proto-Semitic, brings us to the end of operation (5) in our plan of investigation; and in concert with it enables us to pass over from the very general to the very specific.

By the preceding operations, the thesis of phonetic iconicity and the unity of the post-Ugaritic scripts have been established. That the disinterment of the Ugaritic script is epoch-making has been precluded. However, further research in the Greco-Ugaritic connection has yet to be pursued; and how proto-Semitic survived in Ancient Arabic may await a study of the inherent incarnations of proto-Semitic in Arabic.

1.  = '	16.  = m
2.  = i	17.  = n
3.  = i	18.  = s
4.  = b	19.  = s
5.  = g	20.  = c
6.  = d	21.  = p
7.  = h	22.  = s
8.  = w	23.  = s
9.  = z	24.  = q
10.  = h	25.  = r
11.  = h	 = s
12.  = t	26.  = s
13.  = y	27.  = s
14.  = k	28.  = t
15.  = l	29.  = x

The Ugaritic(Ras Shamra)  
Phonemic Inventory.From  
H.Bauer in Der Alte Ori-  
ent,xxxvi,I/2(1937),pl .  
xiii.

Illus. 27.

### 3.B

#### PHARYNGEALIZATION IN SCRIPT

We have so far identified the scriptological root to which the Arabic script belongs and discussed the general conditions

which we believe governed the development of the offshoots from the scriptological prototype. The next step in our plan is to investigate the first level prosody, i.e. pharyngealization, as represented in the Arabic script in the light of the Ugaritic script.

The simplest argument in favour of the phoniconic basis of representing the first level prosody in script may be brought home to us by providing the answers to the following questions:

- (i) Why is it that all the pharyngealization-bearing figurae in the Arabic script have the unified hump-feature? And, likewise, why is it that all the Ugaritic figurae with a pharyngeal potestas or a pharyngeal connection are characterized by the pharyngeal marker?
- (ii) Why is it that all the hump-featured figurae can be divided into +vertical line and -vertical figurae?

A close examination of the pharyngealization-bearing figurae in the Ugaritic and Arabic scripts would very probably shed the lights of an answer to our quests.

As soon as we bring the mental image of the figurae into focus, the articulatory description of the postures involved and the abstractive figurae themselves come into focus side by side, especially if we keep our attention fixed upon the pharyngeo-scriptological markers, i.e.  $\frown$  and  $\dots\blacktriangledown$ , as well as the marker of proportional frontishness  $|$  and  $..|..$ . On this

plane we can unmistakably distinguish the presence and significance of the scriptological determinatives of the figurae which act as representations of two articulatory features:



- (a) the convexity of the back of the tongue and its retraction towards the pharynx; hence ^ in the Arabic script and ...◀ in the Ugaritic script;
- (b) the frontishness of the +vertical line-figuratized segments in proportion with the -vertical line-graphically represented ones.

The two points above may be made clearer by an illustration. The representations of the voiceless dental stop in the Ugaritic script ▶ and ◡ in the pre-dotation Arabic script, were transformed to represent the pharyngealized voiceless dental stop by the addition of the pharyngeal marker and the vertical divider, as shown below:

UGARITIC	IPA	A.ARABIC
▶	t	ﺕ
◡	ﺕ	ﺕ
▶◡	t̤	ﺕْ

PHARYNGEALIZATION-representation

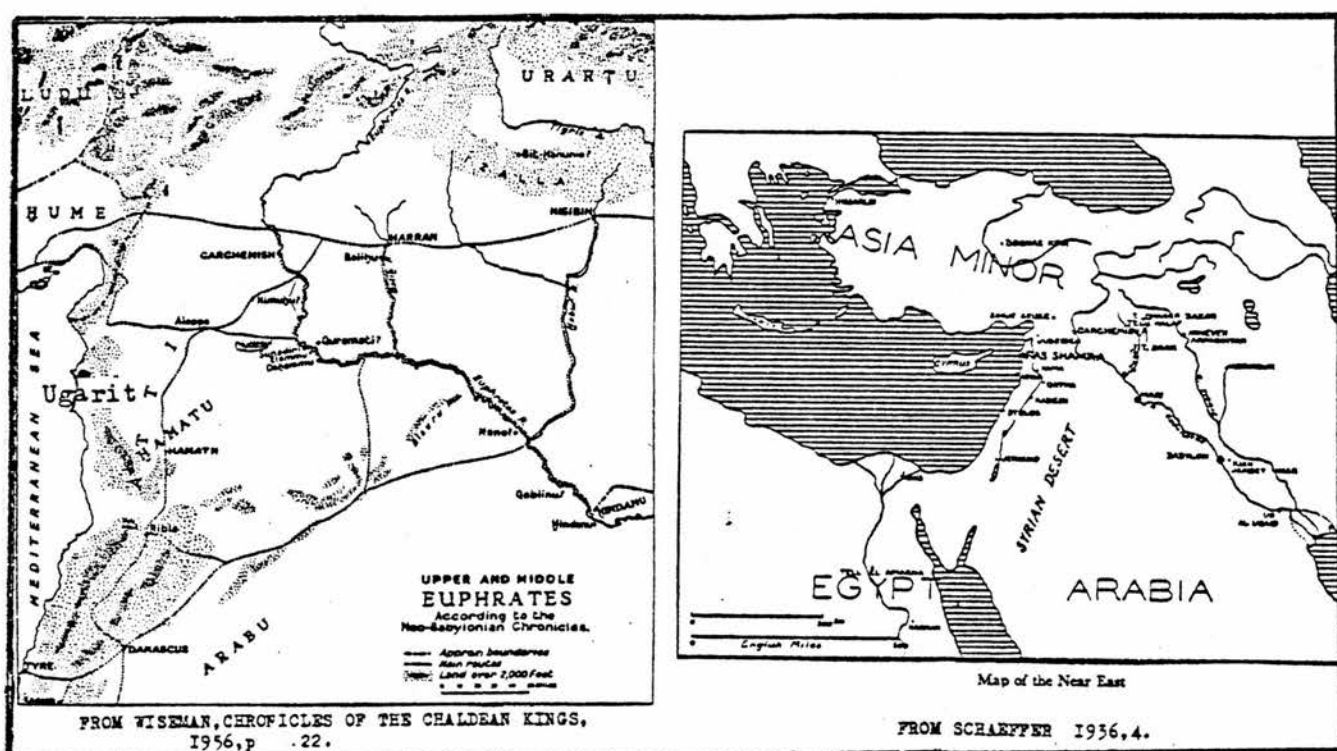
Illus. 28.

From this angle of vision which considers the figurae not as haphazard designations, acrophonically invented, but as meaningful indicators of certain reflectively- and abstractively-represented features of the articulatory postures involved, as perceived by the designators of the figurae, we are able to understand how the sign for the voiceless alveolar fricative  was modulated by the addition of the hump-feature and the neutralization of the vertical divider to constitute the sign for the pharyngealized voiceless alveolar fricative , which coincides with the pharyngealized voiceless dental stop in that they both bear the pharyngealization-marker, i.e. the hump, but contrasts with it in that it is devoid of the vertical divider.

Now that the first stage of our plan of investigation has reached its term it may be convenient to sum up our conclusions.

- (A) The Arabic script, whose phoniconic roots we have roughly established by the process of re-assessing the earliest quasi-alphabet yet known, has a greater extension in time than what has been proposed; it has its roots directly or indirectly in the Ugaritic script, the conventionalization of which dates back to 1500-1400 B.C.
- (B) All the East Mediterranean scripts have apparent phoniconic affinity with the Ugaritic script from which they developed.
- (C) Although the Ugaritic script has extrinsic affinity with the Mesopotamian scripts it stands out intrinsically as a radical emancipation from the puriconicity of the older Babylonian and Assyrian scripts.
- (D) The consanguinity between the Ugaritic script, on the one hand, and the other East Mediterranean scripts, on the other, may be mystified if the general evolutionary conditions are not taken into consideration.





Illus. 29. Two maps showing the East Mediterranean and Mesopotamia in ancient times

- (E) The phoniconic nature of the later East Mediterranean scripts does not become quite intelligible unless we view them as ramifications of a larger circle of which each has come to become a member, and each of which developed, though each in its own way, according to general and specific conditions, the grassroots of which lie in the general volume of the theoretical preconceptions of the appliers and the practical requirements of the language concerned.
- (F) On the evidence of the figurae the first level prosody, i.e. pharyngealization, was observed and represented in both the Ugaritic and the Arabic scripts.

In the light of the preceding conclusions on matters of phonetic importance we can draw certain provisional conclusions regarding alFarahidiy's contributions to the Arabic script, per se.

*In view of the already proven fact that all the East Mediterranean scripts - irrespective of whether they are once or twice removed from the prototype - developed from the Ugaritic script, alFarahidiy's position of significance, as far as the Semitic scripts are concerned, arises from two fundamental points:*

*(i) His restoration of the principles which lie hid underneath the crust of the East Mediterranean scripts;*

*(ii) the advances he made on the representational capacity of the Ugaritic script and its Semitic off-shoots, which remained fossilized in the wake of their conventionalization and stylization by the innovation of what has come to be known as alFarahidiy's diacritical system, or what we may term as the phonematio-prosodic system of diacritica.*

This provisional conclusion on alFarahidiy's position in the circle of Semitic scripts carries with it two corollaries concerning:

- (A) The development of diacritization in Arabic, Hebrew and Syriac, and which followed suit of which, in the introduction of a phonetically-based, diacritical system.

In fact, to usher in a discussion of the corollary above would lead too far afield. However, for the meantime, reference has to be made to the literature on the subject, particularly Abbott (1939), Birkeland (1947), Blake (1940), Chomsky (1941), Margoliouth (1892/3), Morag (1962), and Segal (1953), with the

reservation that there are several points of dating and interpretation on which one can take issue with the above authorities.

- (B) The Arabic script in pre-Farahidiyan times. (See below.)

#### 4.A THE ARABIC SCRIPT IN PRE-FARAHIDIYAN TIMES

The Arabic script has been viewed to have developed from the Nabataean script (cf. Littmann, CIS, II, 1, 1914; Abbott, 1939,1), which is, strictly speaking, Aramaic simplified and adapted to Arabic (Diringer, 1968,209). Undoubtedly, there is a certain connection between the two scripts, at least in the general characteristics of the figurae, in spite of the recent opposition of specialist scholars of Nabataean "who deny the existence, in its cursive forms, of the resemblance (of Nabataean) to the future Arabic forms", (Sourdél-Thomine, 1978, EI,1120). Be that as it may, it is quite tenable to accept the generally admitted view of modern scholars who agree with the earlier Arabic tradition, which places the adaptation and simplification of the Arabic script at AlAnbar and alHirah in Iraq.

Ibn Khaldun, in his "Muqadimah" (Introduction to History, trans. Rosenthal, 1958, ii,377-391) summarizes the Arabic tradition (also see Ibn-nNadim, ed. Flugel, 1964,4-5; alQalqashandiy, 1914, iii,13) as follows:

"Writing is the outlining and shaping of letters to indicate audible words which, in turn, indicate what is in the soul. It comes second after oral expression."

(p.377)

"The transformation of writing in man from potentiality into actuality takes place through instruction."

(378)

"Arabic writing had already reached its most developed accurate, and excellent stage in the Tubbaʿ dynasty, because (that dynasty) had achieved a great sedentary culture and luxury. The handwriting there was called the Ḥimyarite script. (Writing) was transplanted from (South Arabia) to alḤirah, because the dynasty of alMundhir was there. They were relatives of the Tubbaʿ and shared their group feeling; and they were the founders of the Arabic rule in the ʿIraq .... From alḤirah, the inhabitants of aṭṬaʿif and the Quraysh learned writing, as has been said ... It is a more likely theory than that of those who saw that they learned it from the Iyad, the (earliest Arab) inhabitants of the ʿIraq.

"The theory that the inhabitants of the Hijaz learned it from the Tubbaʿ and the Ḥimyar, is the most plausible one."

(379)

Whether the theory that Ibn-Khaldun adopts is the most plausible is not our main concern here, though there are a number of pointers against it, primarily (a) the figurae reflect a North Semitic development rather than a South Semitic development, and (b) the geographic position of alḤirah as a buffer-zone between Mesopotamia and Syria logically presupposes that it came into contact with writing a long time before the Southern Arabian immigrations to alḤirah, especially when one takes into account that alḤirah came to existence during the reign of Nebuchanezzar in the 7th century B.C.

A simplistic and brief investigation of the figurae of the Aramaic script as adapted to the Arabic speech of the Nabataeans, would provide tokens of resemblance between the Nabataean and the Arabic scripts, if not a direct line of development. This is manifested in the inscriptions from Damascus (Aramaic: Aram Dammesheq (the state of Damascus); Arabic: Dimashq), from Hauran, the fertile high plateau, south of Damascus, from Hijr in North Arabia, the inscriptions discovered in Egypt and Palestine, the inscriptions found in Italy and the inscriptions discovered in the Aegean island of Cos, as well as the neo-Sinaitic inscriptions of Wadi-l-Mukattab (about 75 miles from Suez), and the early Arabic inscriptions, proper, which include trilingual Greek-Syriac-Arabic inscriptions found at Zabad near Aleppo, the Greek-Arabic bilingual discovered in the vicinity of Damascus, the inscriptions from Harran and Um-l-Jimal in Syria, as well as the

graffitti on the Temple of Ramm (Iram) in the vicinity of al<sup>6</sup>faqabah (to the north-east of the Red Sea).

Whatever the case is, we are of the opinion that the early systematizers or rather appliers of a descendant of the Ugaritic script at alHirah - which is positioned half-way between Babylon and Mari - should have had a fair amount of knowledge of the ramifications of the Ugaritic script provided by their tribal connections with South Arabia and the Nabataean Kingdom of Petra and the Kingdom of Palmyra, not to mention their ancient relations with Babylonia.

After having provided a rough view of the plausibility of the origination of the Arabic script at alHirah, we may turn to that part of the scripto-historical landscape which is already within our perspective. Nevertheless, it seems to me that a brief digression concerning the order of the letters in the Arabic script is worthwhile in order to set the record straight.

#### 4.B THE ORDERS OF LETTERS IN THE ARABIC SCRIPT

In addition to the current order of letters which is based on considerations of external resemblance amongst the scribal morphologies of the figurae in later stages, two other arrangements came to be the vogue.

#### 4.B.i      The Abjad Order

This arrangement is based on the representation of the letters in eight mnemonics. It has been termed /~~h~~isa:b-l-jumal/ (the Collective Arithmetical) and the Abjad-order after the first mnemonic, which gave rise to the Arabic term /ʔal ʔabjadiyah/ to denote the alphabet.

In its general order it coincides with all other Semitic orders but it differs from them in that it contains what has been termed as /ʔar rawa:dif/ (the Supplementary Mnemonics), i.e. /θaXiðun/ and /~~da~~ðiðun/ , which brings it into numerical agreement with the Ugaritic repertoire (cf. Virolleaud, 1950,57), if the two signs for /i: , ε:/ and /u: , ɔ:/ are added.

In this system the mnemonics take the form of memoriae technicae which provide the phonemic inventory when the written form is decomposed as signs, plus the short vowels and the diphthongs: /au/ in /hauwaz/ and /ai/ , if we adopt the other reading of /qurifat/ as /quraisat/ .

The table below will help illustrate this point.

MNEMONICS IN SCRIPT		MNEMONICS IN SPEECH		PHONEMES DISCLOSED	
ARAB.	TRANSC.			ARAB.	TRANSC.
ا ب ج د	?-b-j-d	?abjad		ا ب ج د ه و ز ح ط ي ك ل م ن س ع ف ق ر ش ت ث خ ذ	? b j d h w z h t i:(y) k l m n s q f q r r t e x d d d
ه و ز	h-w-z	hauwaz			
ح ط ي	h-t-i:(iy)	hutti:			
ك ل م ن	k-l-m-n	kalimun			
س ع ف	s-q-f-θ	saqfaθ			
ق ر ش ت	q-r-θ-t	qurifat			
ث خ ذ	θ-x-θ	θaxiθun			
ض ط ظ	ḍ-k-θ	ḍaxiθun			
THE ABJAD ORDER OF LETTERS					

Table 8. The Abjad order of letters

#### 4.B.ii AlFarahidiy's Order

In alFarahidiy's order the figurae are arranged on account of their places of articulation, for phonological considerations, beginning with the voiced pharyngeal fricative and ending with the bilabial nasal as far as the contextually-sound segments are concerned. But, as regards the contextually-unsound segments, they are arranged in a separate category at the end of the phonological system, with a view of the glottal stop as the beginning of all vowels.

In practice, alFarahidiy's phonological order was confined to the arrangement of lexicons.



If we now trace the pre-Farahidiyan reformation we find that two stages emerged in the Seventh Century A.D. - the dotation-stage and the embryo-diacritization stage. However, to realize the significance of these two stages one has to bring the mental image of the Arabic script, devoid of dots and diacritica, into perspective.

An illustration will bring the image home to us. Let us consider the first of the collective arithmetical mnemonics and its reading potential. Structurally speaking this mnemonic provides three reading possibilities.

A	B	C
1. $C^VCC^VC$	1. $C^VC^VC^VC$	1. $CC^VC$

Illus. 30. Reading possibilities of / $\text{اى}$ /

Those structural entities are capable of generating six phonologically-possible entities from  $\text{اى}$  - if the final C is considered as pre-pausal - which would be represented as follows:

A	B	C
2. $c^vcc^vc^v$ 3. $c^vcc^vc^{vn^1}$	2. $c^vc^vc^vc^v$ 3. $c^vc^vc^vc^{vn^1}$	2. $cc^vc^v$ 3. $cc^vc^{vn^1}$

Illus. 31. Further reading possibilities  
of / $\mathfrak{c}^1$ /

Systemically speaking, the undotted figura for, say, /b/ , in an intermediate position, may denote four other phonematic units, i.e. / $\underline{n}$ / , / $\underline{t}$ / , / $\theta$ / , and /y/ or /i:/ , plus /b/ ; the undotted figura for /j/ may indicate /X/ or / $\mathfrak{h}$ / ; and the figura for /d/ may represent / $\mathfrak{d}$ / .

On account of this pasticcio which could only be remedied either by the introduction of dots for economy or by the designation of new signs, each morphological entity is capable of bearing 20 phonologically plausible entities. Now if we multiply the number of the morphologically plausible entities by the potential of each structural possibility, the aggregate potential will be 220, most of which will be made recognizable by the process of differentiatory use of dots, and redundant by the fact that they are semantically impossible.

<sup>1</sup> In an investigation of the prosody of nuntation it was found that what we have structurally transcribed as / $^{vn}$ / is a pharyngealized, retracted, voiced dental nasal, which homorganically nasalizes the preceding short vowel. Hence the symbol we adopt all through is ( $\overset{v}{\mathfrak{h}}n$ ) .

However, the 220-aggregate is not the end of the problem, because such an aggregate is the resultant of one short V- constituent. It follows from this that we have to multiply the aggregate by the three Arabic vocalic possibilities to give us the total of 600 (60 possibilities have been dropped out due to the structural impossibility of /i:a/ ), most of which can be exemplified by the introduction of some sort of diacritization to indicate the prosodicity of the short vowel and to indicate the prosody of nunation / $\overset{\sim}{v}$ -n/. Yet, the 600- aggregate is not the general total because only one short vowel-possibility has been taken into account; that is to say, the generated morphological entities have been calculated on the grounds of having one short vowel-phoneme; while it is possible to reproduce new mathematical sequences by the substitution of one vowel for another within the morphological entities. But, again, the number of possibilities may be made less by the fact that they are semantically impossible.


Nevertheless, the ancient method of diacritization, i.e. embryo-diacritization, has not survived, for, having been extrinsically bungled with dotation, it presented a number of chronic formal complexities, not to mention its failure to cope with other intrinsic deficiencies in the script. A fortiori, it may be concluded that while the dotation-method remained in use in religious circles for some hundred years after the innovation of the Farihiyyan method, it was doomed to failure due to certain extrinsic and intrinsic deficiencies.

#### 4.C.i Extrinsic Deficiencies

In considering for a little the appearance of the differentiatory method in pre-Farahidiyan times, it may be noted that the characteristic feature of dotation and embryo-diacritization, which was finalized by /ʔadduʔaliy/ (d.ca.688 A.D.) and his students, /ʔibn-fa:sim/ (d.ca.707 A.D.) and /ʔibn-yaʕmar/ (d.ca.708 A.D.), is that the dotation determinative was given two differentiatory values by the designation of colour A to bear the figurae and their internal differentiatory dots, and colour B to bear the short vowels and nunation. Still, as though that complexity was not enough, another imbroglio was added by overloading the colour B-dot with two other designations:

- (i) The positioning of the dot over, under, within or beside the figura indicated that the short variants of the phonematic units /a:/, /i:/ and /u:/ - respectively - should follow the phonematic unit represented by the linear figura.
- (ii) The short vowel, positional indicator was extended by doubling to indicate the prosody of nunation. (alQalqashandiy, 1914, iii, 160; Ibn-Nadim, 1964, 40; adDa:ni, ed. Hassan, 1960, 3-5.)

#### 4.C.ii Intrinsic Deficiencies

It is evident from the illustration we have derived from the potential reading possibilities of  in its undotted and undiacritized form that embryo-diacritization, ingenious as it was, managed to solve only two major problems, viz. the representation of the short vowels by the method of positional, colour differentiation, and the representation of the prosody of nunation

by extending the differentiatory colour method. Nevertheless, although it served its ends as far as it went, embryo-diacritization was destined to fail primarily because it left unravelled far more serious problems, the realization of which could have entailed further overloading of colour B or the introduction of new colours far beyond the potential of the spectrum, which did happen in a miniature way when, at a later time, the traditionalists attempted to extend /ʔadduʔaliy/'s, et al.'s method to give it a new lease of life viz-a-viz alFarahidiy's prosodic method.

The inherent problems left unravelled by the embryo-diacritization method were basically the following:

(1) The problem of all the post-Ugaritic, Semitic scripts which resulted from the amalgamatory simplification process, that entailed the elision of the figurae for vowels, and the annexation of their representation to the figurae for the glottal stop and the double-articulated central approximants. Although embryo-diacritization managed to solve quite a few deficiencies its Achilles' heel remained the representation of the glottal stop.

We have already seen (in 4.C) what the result is:

/ ʔ / represents /ʔ/ or /a:/  
or { + /ʔ/ + /a:/ }  
or { - /ʔ/ + /a:/ }  
or { + /ʔ/ + /a/ }  
or { - /ʔ/ + /a/ },

where the minus-structures are contextual; that is to say, they occur in the continuum of speech in certain environments; something which entails the collapse of a syllable and its replacement by a syllabic  $\zeta$  .

(2) The inherent problem of representing the abutting consonants.

(3) The problem posed by the representation of the definite article,  $/ʔal/$  , which is subject to certain contextual changes, on account of which  $C^V$  is assimilated in the preceding word-final short vowel, and  $/l/$  is annexed as an arresting  $C$  , or annexed as a geminate to form an abutting cluster with the following  $C$  .

(4) The anarchy in the division of words into taxophonemic syllables, created by the absence of:

(4a) an elision-liaison marker, and

(4b) a zero-vowel marker, i.e. suku.n. (cf. Firth, 1948, repr. 1970, 9; Mitchell, 1953,14).

In fine, the further a phonetician pushes his analysis of the extrinsic and intrinsic deficiencies of embryo-diacritization by determining the difficulties which would perplex the ordinary reader - the educated reader is excluded in view of the fact that the skeleton outline of the Arabic word leads any reader to, more

or less, the sphere of content, but thereafter it is up to him to supply, in the light of the content, the correct short variants of the Arabic trivocalic system to the consonants; a process which requires mastery of grammar, notwithstanding knowledge of the rhythmic inter-dependencies within the foot boundaries - the higher is the esteem in which one holds alFarahidiy's contributions to the Arabic writing system by supplementing it with his system of diacritica, and by the restoration of the principles which lie hid underneath the East Mediterranean figurae in his designation of the diacritica.

## 5. THE FARAHIDIYAN RESTORATION

We have so far ascertained the phoniconic bases of the East Mediterranean scripts, and the simplificatory processes which eventually ended in consigning to oblivion the theoretical preconceptions behind the figurae, and the obliteration of the representation of certain phonological constituents - a course of regradation which a priori put in requisition the reformation of the offshoots. We have also considered the significance of the dotation-reformation which has caught on since its early introduction; and we have introduced a preview of embryo-diacritization whose deficiencies necessitated an overall radical move to settle the major discrepancies between written Arabic and spoken Standard Arabic.

In setting out to investigate the Farahidiyan restoration, it seems best to confine our research to two principal questions concerned with (a) alFarahidiy's parentage of the fully-fledged, phonetically-based, prosodic method of diacritization, and (b) what conventions lie in the background of the diacritica. And if we manage to determine them in the affirmative, our investigation of the third area of alFarahidiy's legacy will have achieved its objective, i.e. the localization of his contributions to the Arabic script on the map of the history of phonetics as a high profile work that had its grassroots in a comprehensive, phonological investigation of hierarchic relations which exist amongst the phonematic units and prosodies of Arabic - a body of genuine research whose appropriate discipline of study is Phonetics.

In the expansion of Arabic, accompanied by its script, as a language in use alongside the Iranian languages (such as Persian and Pashto), the Turkish languages (such as Cöthmanli Turkish and others in the Caucasus and Turkestan as far as China), languages of the Indian and Malayan Peninsulas, languages in use in Madagaskar and the Comoro islands, languages of North Africa, of Medieval Spain, and of Slavonic Europe, as well as the Bantu and Sudanese languages, the more the non-native speakers adopted it as their second language, the more the necessity for precautionary, instructive methods in teaching and reading Arabic posed itself for the Arabic linguists who on account of the flexional type of Arabic and the deficiencies of the Arabic script in the representation of



those internal-external complexities found it imperative to improvise ways and means to encounter that problem.

The often quoted anecdote of what racked the brains of the father of embryo-diacritization will perhaps make the necessity clear.

It is related that a non-native speaker who, by misproviding the short vowel (/i/ in the stead of /a/), changed the complete content of one of the theological texts into a sort of blasphemy.

The text in its undiacritized form appears as follows:

/an allh bri: mn almsrki:n w rsu:lh/

ان الله بري من المشركين ورسوله

(K.IX,3)

In the mistaken reading it was rendered as follows:

/ʔinnaʔ ʔahaʔbari:ʔun mina lmuʔriki:na wa rasu:liḥ/

English interpretation:

Allah is free from obligation to the idolators and His Messenger

whilst it should have read as follows:

/ʔinnaʔ ʔ ha bari:ʔun mina lmu riki:na wa rasu:lah/

English interpretation:

Allah is free from obligation to the idolators and  
(so is) His Messenger

Following the Duʔaliyan method the text is diacritized  
thus:

/an allh bri: mn alm riki:n w rsu:lh/

Here, at last, we have the Duʔaliyan method of  
diacritization which is antecedent and apparented to the Farahidiyan  
restoration, (cf. Ibn-Nadim, 1964,40; adDani, 1960,3-4;  
alQalqashandiy,1914,160-161; alʕushsh, 1964,31-37).

#### 5.A ALFARAHIDIY'S PARENTAGE OF THE ARABIC PROSODIC DIACRITICA

In the light of this identification of the pre-Farahidiyan  
stage in the Arabic script, let us consider the Arabic literature on  
alFarahidiy's parentage of the current method of diacritization  
through which we have come to identify the method with him.

The early Arabic literature on the subject is very abundant. Besides the works in the bibliography, his parentage of the current method is well attested by the linguists and biographers who tackled the subject, namely azZubaidiy (d.ca.989 A.D.), 1954,314; Ibn-Nadim (d.ca.1047), 1964,43; adDani, (d.ca.1049), 1930, 1932,125, 1960,7,9,22; alHamwiy (d.ca.1229), 1927, iv,182; alQiftiy, (d.ca.1248), 1903, i,346; Ibn-Khallikan (d.ca.1282), 1948, i,244; Ibn-l-Jazariy (d.ca.1429), 1933,257; Haji Khalifah (d.ca.1657), 1943, ii,1467).

A negative factor against the introduction of the testimony of all those authorities is that it would be an inertia spent on the historical side at the expense of the analytical one. Accordingly, it would suffice our purpose to introduce the testimony of adDani (1960) for three main reasons:

(i) AdDani<sup>1</sup> takes his place in the historiography of the subject from his capacity as a linguist, and from his authority on dotation and diacritization as it speaks for itself in his extant works:

- (a) Attais.r (the Simplification of the Seven "dialectal" Readings);
- (b) Almuqni<sup>6</sup> (the Persuasive in Diacritization); and
- (c) Almuḥkam (the Rigorous "Criterion" in Dotation and diacritization).

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<sup>1</sup> For his biography, see Ibn-Khaldun, ed. Rosenthal, 1958.

(ii) His knowledge of the subject was not a second hand one. It was not far removed from the Farahidiyan times. It reflects how the Farahidiyan method was rejected by the traditionalists, and confined to secular works until its value was well realized, and in consequence became all the rage - a state of affairs, though it reflects the reaction to the method in Medieval Spain and North Africa, would be in a sense analogous with the reaction to the method in the East, (cf. al<sup>ḥ</sup>ushsh, 1946,37).

(iii) The discovery of the manuscript of his third work, AlMukkam (ed. Hassan, 1960), at the College of Language and History in Ankara, provided further details of alFarahidiy's parentage of the subject.

On the etymology of /ʔal-ʔi<sup>ḥ</sup>ja:m/ (dotation), adDani states:

"When you say /ʔa<sup>ḥ</sup>jamtu/ the written text, you mean I have dotted it ... /huru:fu-lmu<sup>ḥ</sup>jam/<sup>1</sup> are the letters of the alphabet in isolation. They have been termed as such in view of the point that /ʔi<sup>ḥ</sup>jam/-ation is disambiguation. In that sense, /ʔa<sup>ḥ</sup>jamtu/ something means I have disambiguated it. From another point of view, those letters are speech test-units on the score of the expression /<sup>ḥ</sup>ajmtu-l<sup>ḥ</sup>u:d/, which you use when

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<sup>1</sup> AlFarahidiy defines /huru:fu-lmu<sup>ḥ</sup>jam/ thus: "They are the letters of the alphabet in isolation. They are so termed because they are originally non-Arabic.\* /ʔi<sup>ḥ</sup>jam/-ation is dotation for the sake of disambiguation". (MS.p.59)

\* /ʔa<sup>ḥ</sup>jamiy/ : Non-Arab.

you intend to indicate that you have tested the characteristics of a stick."

(1960,22)

On the etymology of /ʔaʃʃakl/ = diacritization, he writes:

"/ʔaʃʃakl/ is basically restriction and control. Within this context, you say /ʃakaltu-lkitab/ (I restricted the written text), i.e. I restricted and controlled its content."

"On the authority of Ibn-Muja:hid in his work on 'Dotation and Shaklification', shaklification is a distinctive characteristic of the written text in the same way (prosodification) /ʔalʔiʕra.b/ (the provision of the phonematic units with the necessary prosodies) is a distinctive characteristic of speech. Had it not been for shaklification, the content of the written text could not have been conceived; and had it not been for prosodification, speech could not have been actualized."

(1960,23)

When we peer into adDani's historiography of the development of diacritization in Arabic, two abiding stages stand out clear. Those stages are:

- (a) The Circular Diacritization Method; and
- (b) The Verse, i.e. Prosodic Method, (p.223).

In actual fact the second method may be described as the secular method by evidence of the view that, in its early stages, it was rejected by the religious traditionalists on the grounds of impropriety for religious texts and, a priori, it had to be content with the prestige it was given in the other main stream of Arabic literary life, i.e. verse, to which it was first applied. To put it another way: it was adopted in all Arabic linguistic studies, other than the Qur'anic texts (adDani, 1960,22). Its domain of influence and application, in consequence, became the secular fields concerned with the Arabic language (adDani, 1960,22; Ibn-Durustawaih, 1927,59).

5.A.i      The Circular Diacritization Method:

Ad-Dani uses this heading to intitle what we have termed as embryo-diacritization or colour B determinative. What interests us in the historiography of this stage is not only the fact that it bears evidence to the development of diacritization as a realized linguistic necessity, but it also propounds the view that alFarahidiy, prior to the introduction of his prosodic method of diacritica, remedied some of the shortcomings of the circular method by the designation of four signs to specify the following scripto-phonological phenomena:

- (i)      the prosodico-phonematic feature of /taʕdi.d/  
            (abutting consonants);
- (ii)     the prosodico-phonematic glottal stop;

- (iii) the allophonic,<sup>1</sup> pre-pausal prosody of /ʔal-ʔ ʃma:m/;<sup>2</sup>
- (iv) the allophonic, pre-pausal prosody of /ʔar-raum/<sup>3</sup>  
(adDani, 1960,3-5).

#### 5.A.ii The Prosodic Diacritization Method:

The division of the evolutionary stages into circular and prosodic as introduced by adDani enables us to state quite securely that with the innovation of his prosodic method, alFarahidiy marked the end of the circular method in which he played a complementary part, and started afresh with his simple<sup>4</sup> prosodic system which in part restored the principles of the Ugaritic script, and eventually superannuated the circular method due to the fact that it provided the remedy for all the extrinsic and intrinsic deficiencies of its antecedent. However, it is needless to emphasize that forasmuch as it provided a simple representation with a phonetically-based set of conventions embodied by signs that transfer a hierarchy of prosodic relations, it has never been supplanted. In actual fact, the system justifies its approach by the prosodic analysis of the constituents it offers the reader.

<sup>1</sup> Allophonic in the sense that they are variants of /ʔiska.n/, i.e. O .

<sup>2</sup> Lit. Giving one thing the smell (dash) of another. Phonetically, it involves the pre-pausal off-gliding of a C by assuming the articulatory posture for a short vowel but not necessarily making it audible. AlFarahidiy defines this feature in the following terms: "It is drawing closer to something or somebody. The /ʔi/ma.m/ is to terminate a /sa:kin/ [a C] with a /ʃammah/ [smell] dash of a /karakah/ [V]. For example, you terminate the /l/ in the utterance /ha:ða lʔamal/ with a [dash] or a smell of a /dammah/ [lit. the rounded, the embrace], but you check it to silence, although you still feel it in your mouth. It is not really /takri.k/ [provision of a C with a karakah, i.e. with a prosody of synthesis] that can be taken into account. Rather, it is a dash of a slight /dammah/. It is applicable to the /kasr/ [re. kasrah (the break)] and /fath/ [re. fathah], as well." (Ms.591) The term was given another dimension; it involves approximating one phonematic unit to another, e.g. /ʃ/ in Edinburgh Scots, or /s/ in O. Arabic.

<sup>3</sup> Phonologically, the slurring of a final short V (Wright, 1898,i,276c; Cachia, 1973,A40). Phonetically, it is the superimposition of a pre-pausal short V on the "detent phase"\* of a C (\*Rousselot, 1,334-5).

<sup>4</sup> Using the simplest possible shapes in the smallest possible number. The term is borrowed from Abercrombie (1964,17).

All former accounts of alFarahidiy's innovation before the recovery of adDani's manuscript from oblivion have been antiquated by the author's authenticative, straightforward account of the development of diacritization in the Arabic script.

Regarding alFarahidiy's parentage of the present day prosodic system of diacritization, adDani states:

"On the authority of alMubarrad (d.ca.898), the diacritics you encounter in books have been innovated by alKhalil b. Ahmad alFarahidiy. The short vowels were systematized on the analogy of the figurae. /ʔaddammah/ (= u ' ) is a small, supralinear (u: / , placed over the figura so as not to be intermixed with the linear figura; /ʔalkasrah/ (= , ) is a small infralinear /i: ٓ/ ; and /ʔalfathah/ (= a ' ) is a small oblique, supralinear /a: ٓ /" <sup>1</sup>

(1960,7)

"He also added that alFarahidiy designated the supralinear sign /<sup>ω</sup>/ , which he derived from the first figura - undotted - of the word /ʃaddid/ (i.e. double), and the sign /<sup>~</sup>/ which he derived from the first figura - undotted - of the word /Xafi:f/ خفيف (light; i.e. make it light; do not double).

(ibid.)

"The first to categorize the diacritics and to explain the conventions behind them in a book is alFarahidiy."

(op.cit.,22)

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<sup>1</sup> Also see Si:bawaih, 1881, ii,315.



"Nevertheless, they (the traditionalists and the traditional scribes) refrained from using the prosodic diacritization method and preferred to stick to the traditional method which had been started by the first generation of the prophet's followers."

(ibid.)

"Nonetheless, the conquest of the prosodic diacritization method was inevitable due to the advantages it had over the circular method: (i) it made the use of the colour technique redundant; (ii) it designated distinctive characteristics to each diacritic."

(op.cit.,23)

"Eventually, it superseded the traditional method in linguistic studies; and ere long it cut it out in scribing the Qurʾan."

(op.cit.,23; also 35,41)

Now, if we plot out the testimony of Ibn-Durustawaih (1927,58) in which he specifies that:

"The figura for the glottal stop /ʔ/ has been innovated by alKhalil who identified it as an unlooped /عʔ/ due to the proximity of their places of articulation",

we may conclude that alFarahidiy, by fusing the phonetic observations of his forerunners on the short vowels and nunation, and his overall phonetic approach to the Arabic script, restored the East Mediterranean principles of phonetic iconicity in script, which have been dealt with in our analytical reconstruction of the phoniconic elements in the Ugaritic script. However, it remains to be mentioned that in his

phonematio-prosodic approach, he neither fossilized the quasi-alphabeticity of the Ugaritic script, nor settled for the semi-syllabicity of the Aramaic script; but he carried the Arabic script to a very advanced stage of phonematio-prosodification which ultimately gave rise to the Firthian view that:

"the Arabic script in all its forms, and especially when fully pointed, offers what, in my terminology, I would describe as a prosodic analysis of the word and piece. In this system of writing, the unity of the word and piece is formally expressed. The initial, medial and final forms of what I will provisionally call the letters emphasize one of the features of prosodic analysis, which draws attention to the characteristics of the whole piece, including the word; that is to say, it notes syllable structure and marks the beginning, middle and end, internal junction of syllables, interword juncture, such prosodies as length, stress, prominence, tensity and laxness, and what I term Y and W and central prosodies."

(Firth, ed. Palmer, 1968,31)

#### 6.A ALFARAHIDIY'S DIACRITICS AND CONVENTIONS <sup>1</sup>

It is important before we enter upon the phonetic conventions in the background of alFarahidiy's system of diacritica to re-identify the Arabic writing system because, in ignoring to do

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<sup>1</sup> For "Text and Conventions", see Abercrombie, 1964,22-24.

so, we would be putting the cart before the horse. The Arabic script, in its undiacritized form, is a simple syllabic + writing system. It is termed as syllabic + because it provides scriptological representation of the prosodically-inferred long vowels, and morphologically simple because it uses the least number of the simplest possible shapes.

An analytico-synthetic investigation of the Arabic script - that is to say, reducing them to their linear bases and their minimal differentiatory markers, i.e. small circles, first level prosody, vertical divider, postero-domal identifier, guttural identifier, etc. etc. - will undoubtedly circumstantiate the second characteristic, especially when one bears in mind that the linear bases can be reduced to five differentiatory marker-bearing shapes including the markers of initiality, mediality and finality.


Having thus identified the Arabic script in its undiacritized form as syllabic + in its capacity as a system, and simple as far as the number and morphology of the figurae are concerned, we can set out to consider the Farahidiyan diacritica and the conventions which they transfer to the text. Before so doing, however, a reminder should be issued to nip in the bud any possible misunderstanding:

(i) The diacritics we encounter in printed books are, generally speaking, simplified forms of the original ones, slightly

modified to answer certain typographical needs. For instance, what has been described as a

"sign originally a horizontal ʔalif but now resembling a Spanish tilde"

(Mitchell, 1953,16)

is by no means an accurate description. It is originally a miniature form of the word /madd/ = , i.e. elongation (Ibn-Durustawaih, 1927,58) placed after /a: / after a linear glottal stop (see below).

(ii) Ever since they came to be prevalent, the diacritica have been compulsory in:

- (a) all linguistic works, and
- (b) all texts wherever semantico-syntactic ambiguities may arise, not to mention the Qurʔanic texts (Ibn-Durustawaih, 1927,59-60).

In view of (i), it is deemed necessary to reintroduce the diacritics in their original forms which in any simplistic criterion hold up the mirror to their phoniconic and descriptive characteristics.

6.A.i AlFarahidiy's Diacritics:

SIGN	IPA	WORD	TRANSCRIPTION	MEANING
1.		شَدِّدْ	ʃaddid	Double .
2.		هَمْزْ	hamz	Squeeze then release .
3.	Ø	سُكُونْ	suku:n	Quiescence.
4.	md	مَدَّ	madd	Elongation
5.	ə	صِنْ	sil	Conjuncture.
6.	u	ضَمَّ	dammah	Embrace.
7.	a	فَتَحَ	fathah	Open.
8.	ʔ	كَسَرَهْ	kasrah	Break.
9.	~ a u i	تَنْوِينْ	tanwi:n	Nunation.

\* The sign, /X/, derived from /=/Xaffif/(produce lightly), as opposed to (I) above has been dropped out because it has been confined to Qurʔanic texts only.

**AL-FARAHIDIY'S DIACRITICS**  
 RECONSTRUCTED AFTER IBN-DURUSTAWAIH(d.ca 1927,57-59;  
 AD-DANI(d.ca.1049),7,9,22-23,35-41;AL-QALQASHANDI(d.ca.  
 1418),1914,160-171).

Illus. 32.

6.A.ii AlFarahidiy's Conventions - Traditional Exposition:

In his book, /kita:bu-lkutta.b/ (the Book for Secretaries), Ibn-Durstawaih (871-957 A.D.) cuts the first turf of Chapter Nine - On Diacritization - with the following statement:

"Bear in mind that diacritization is (a process) of annexing additional (elements) to the linear figurae out of necessity.

Diacritics fall into two types:

(A) A figura-like type by means of which syllables are distinguished; they are representational in the same way the figurae were pictures of the potestas (i.e. the postures, involved) '/kama: ka:na-l muḥjamu suwaran lilkuru.f/'. This type includes the signs for the short vowels and suku.n.

(B) A figura-accompanying type, employed for differentiation, in the same way dotation was used to (morphologically) differentiate similar figurae. Also bear in mind that these (the differentiatory) signs were designated for differentiation out of necessity - a reason which lies in the background of the first type - so as not to intermix one thing with another. For instance, the /muḥaddad/ is, in actual fact, made up of two sounds although it is represented by one figura as in the case of /d/ in /madda مَدَّة/ , and /r/ in /farra فَرَّة/ ; likewise is the /mamdu.d/ : in articulation, it constitutes two ʔalifs /aa/ . Similar is the case of the /hamz/ (glottalization of a vowel, i.e. /ʔVV/) because the /hamzah/ used to be written in the form of the letters of laxness; and had it not been for the sign that denotes the glottal stop, the /hamz/ and the letters of laxness could have been mixed up. Also, the nuninized /munauwan/ is included, because had it not been for nunation, the diptote and the non-nuninized speech could have been mingled with its counterpart. (It remains to mention) the conjunctive alif which looks like the disjunctive one in script; had it not been for the conjuncture sign / ʾ / , it could have been mistaken for its identical in script.

"Yet, it is to be remembered that the (positional) rule for a diacritic is that it should be placed over or under the figura, not before or after."

(57-58)

"If you scribe - ahdna alsraṭ - lmsṭqim -



اهدنا الصراط المستقيم, never diacritize the alif that succeeds /n/ , nor the conjunctive alif in - alsraṭ - nor /l/ because all of them are omitted in the speech-continuum, though they appear in the script; the reason for that (divergence) being that the script was based on the principle of the pausal form of the word and emission of each word in isolation, and diacritization is based on the speech-continuum. Accordingly, you double /s/ of - alsraṭ - due to the fact that you have assimilated /l/ into /s/ ; while you sukunize the /l/ in - almstqim - because you articulate it."

"Keep it in view that it is the practice of workers in the fields of /ʔannahw/ , poetry, and unfamiliar words to diacritize every figura in every word for the purpose of authentication and restriction, because their fields are very intricate; and it follows from that that restriction by diacritization helps distinguish (the texts) for their readers. But, secretaries usually leave the clear undiacritized. However, if ambiguity arises, diacritization is deemed compulsory according to all schools."

(59)

Ibn-Durustawaih succinctly and manifestly explains how the differentiatory diacritics were improvised, thus:

"The differentiatory diacritics incorporate five signs to mark /taʃdi.d/ , /tanwi.n/ (placement of an overturned /n/ - undotted - over a sign for a short vowel), /hamzah/ , /maddah/ , and the sign for /wasl/ (conjunctionis). Each of these signs comprises one figura or more derived from its name (description), in a way similar to the derivation of the figura-like diacritics.

"The sign for /taʃdi.d/ is an undotted, unlooped /  / ; the sign for /tanwi:n/ is a composite derived from /n<sup>u</sup>/ or its dot.<sup>1</sup> The sign for /hamzah/ is derived from /  / , unlooped, due to the proximity of their places of articulation, and because the former is identified by the latter. AlKhalil designated it as such - (a representamen of a phonematic unit), but people (the scribes) did not follow his suit in that course; they scribed it in the form of the lax letters, and conventionalized his sign as a diacritic (a prosody) for the purpose of distinction. The sign for /maddah/ is an unintelligible composite of

<sup>1</sup> Reference is here made to embryo-diacritization.




<sup>2</sup> Reference is here made to the Tami.m-dialect, wherein the voiced pharyngeal fricative and the glottal stop are in complementary distribution in the Bloomfieldian School's terminology; or to put it another way: the opposition between the voiced pharyngeal fricative and the glottal stop is suspended by neutralization, in the Trubetzkoyan Prague Circle's terminology. Concerning this dialectal phenomenon, alFarahidiy (MS.14) states: "The /ʕanʕanah/ [onomatopoeia indicating the environments /ʔa/ → /ʕa/ where the opposition is neutralized] is a characteristic of the Tamims who substitute the glottal stop for /ʕ/ , as, for instance, in the line:

/ʔinna-lfuʔa:da ʕalaʔʔalfa:ʔi qad kamada wa ʃhan mu:ʃikun ʕan  
yasdaʕa-lkabida./

The opposition is suspended in /ʔan/ ." Hence, the rule may be specified as follows:

/ʔ/ → /ʕ/ +a .



/m + d/ , /  / , a miniature form of /madd  / ,  
i.e. elongation; and the sign for /ʔalif-lwasl/  
(conjunctive ʔalif) is an unintelligible, unlooped  
/s / — /  ."

(Ibn-Durustawaih, 1927,58)

#### 6.A.ii.a Excursus: The Figura-like Type:

It has been substantiated (5.A.i) that the figurae for the short vowels were designated as supralinear and infralinear, miniature forms of their linear counterparts to indicate their quantitative difference. This view is further supported by Si:bawaih (1881, ii,342), who, quoting his master, states:


"AlKhalil is of the opinion that the (short vowels) /fathah/ , /kasrah/ and /dammah/ are additional joints<sup>1</sup> (MS.210) which follow or precede (MS.1) the segment (phonematic unit) to help its full actualization in the speech (continuum). The structural paradigm is the one with no transitional additions, as such. Alfathah is derived from /a:/ , alkasrah (is derived) from /i:/ and /ad-dammah/ (is derived) from (u:/ . Each is a portion of what I have already mentioned to you (what it is derived from)."

(AlFarahidiy, in Sibawaih's)


Contrawise, Ibn-Durustawaih (1927,57) argues - perhaps in an attempt to present a simplificatory, calligraphic elucidation to secretaries,

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<sup>1</sup> On-glides and off-glides.

and to avoid further indulgence in phonetic discussions - that the signs for the short vowels were derived from /r / in the term /karakah  / . Be his reasons as they may, the case collapses on account of Sibawaih's exemplification of the designator's view, and the direct, clearcut authentication by the leading linguist after Sibawaih, alMubarrad, who died some hundred years after alFarahidiy, as quoted by adDani (5.A.ii).

#### 6.A.ii.b The Suku.n:

So far we have identified the signs for the prosodies as miniature forms of their linear counterparts to mark their quantitative opposition. One point with respect to the figura-like type may be made here concerning the sign for suku.n (the phonological term is /ʔiska.n/-ation of a phonematic unit, i.e. 0-<sup>V</sup>), the small circle placed supralinearly over a final C to indicate its syllable-arresting function. In this respect, one cannot do better than to quote alQalqashandiy (1914, 165), who imprimis states that the sign for /suku.n/ was a small circle derived from the first stroke in the figura for the bilabial nasal /m  / which terminates the term /jazm/<sup>1</sup>, i.e. apocopation (cf. Palmer, 1874, 173-4) of the final short

<sup>1</sup> A grammatical mood of the verb which necessitates the termination of the verb with a contoid. For instance, the imperitivity of the verb /qum/ = stand up, is actualized and realized by the absence of a final short vowel, which is only dropped out contextually if the closed syllable is succeeded by a syllabic Q, then the whole taxophonemic syllable structure is changed; e.g. /'qumil 'ʔa.n/ = 'Stand up' now. However, the apocopation feature may be maintained by rendering the syllabicity of /l/ redundant; that is, by prefixing it with /ʔa/ to produce a silent stress-emphatic effect; e.g. /ʔum<sub>ʔ</sub>alʔa.n/ = 'Stand up<sub>ʔ</sub> now. According to alFarahidiy, "/ jazaml'harf/ (the phonematic unit has (cont.)

vowel, then adds that:

"It is very likely that the circle which indicates the suku.n was allocated on analogy of the zero-sign which the Indians<sup>1</sup> use in their arithmetics and grammar."

(alQalqashandiy, 1914,165)

The view that the sign for suku.n originated in the sign for cipher was also expounded some four centuries before alQalqashandiy(d.ca.1418) by adDani (d.ca.1049), who stated that:

"It is the very fine cipher which the arithmeticians place in the non-functional position in the gobar<sup>2</sup> arithmetics to indicate its non-functionality. From the sign for cipher, the circle was derived; and accordingly (we are of the view that) there the sign for suku.n originated."

(ad-Dani, 1960,195)

The passages we have met with in the traditional exposition of alFarahidiy's conventions and the interpretation and

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<sup>1</sup> (continued from the previous page) been /suku.n/-ized (MS.553). The suku.n is the absence of the (transitional) off-glide (ḥarakah); it is derived from /sakan/ = i.e. 0-off-glided (MS.501); it has been checked to silence (MS.503)."

\* In Arabic, the piece finality is indicated by the absence of a final short vowel.

<sup>1</sup> For Hindu-Arabic mathematics, see Cajori, 1928.

<sup>2</sup> Cf. Cajori, *op.cit.*, 53-4, and for the Babylonian precedence in using the principle of the local value, pp.47,68,97.

information they transfer to the text do in a number of ways turn our minds in the right direction.

(A) First, it is clear that, while use and publicity expanded the zone of influence of alFarahidiy's system of diacritics, the process of formal simplification has taken its course, and a priori the phoniconic and analphabetic secretions of the signs have been drained.

(B) Second, it may be said on the score of the pronouncement (6.A.ii) that "the figura was a picture of its potestas", that the phoniconic background of the figurae in the early east Mediterranean scripts was not inadvertently reincarnated, but it was fully realized and consciously carried to its furthest ends, and when it fell short of stamina since it could only cover purely phonemic ends, a score of analphabetic diacritics was innovated to cover further descriptive, prosodic interdependencies.

(C) Third, it is important to emphasize that it was not at all easy for the traditionalists and traditional scribes to cope with the phonetic dimensions of alFarahidiy's innovation in script. This can be readily seen in the extension of time which it took his system to catch on, and in the scribe's lagging behind the linguists in understanding why he designated a new representamen for the glottal stop on the linear level.

(D) Fourth, it is noteworthy that alFarahidiy had a clear view of the principle of the pausal form which lie in the background of the early scripts, i.e. their systematization on the principle of the pausal form and the emission of each word in isolation (6.A.ii,(B)), and the word-divider in the Ugaritic script); and facing up to that deficiency, when speech is taken into consideration, he worked out his system on the principle of approximating the script to speech by providing a set of abstract markers which transform the unidimensionally-deficient Arabic script into a multidimensionally-interpreted script where prosodies operate hierarchically over stretches of the utterance.

(E) Although alFarahidiy's system maintains the superficial unity of the word for grammatical considerations, it provides markers to collapse that unity in favour of a higher unit, i.e. the foot, which provides the hierarchic transition to the unity of the utterance - an aspect which has been discussed in detail in the preceding areas.

#### 7.A ALFARAHIDIY'S CONVENTIONS, RE-ANALYZED

It has been stated earlier that alFarahidiy's restoration is a genuine body of phonetic research, and that the appropriate discipline for its study is Phonetics, simply because it provides a distinct prosodic analysis of Old Standard Arabic, and Modern

Standard Arabic. However, it might seem to some critics that in congregating the visual medium in the aural medium, we are reconciling the irreconcilables. On the contrary, the early history of phonetics lies hid underneath the crust of the ancient scripts, positively not far different from the fact that the convergencies between the aural medium and the visual medium lies hid underneath the history of Phonemics. One has only to remember how many and how various the phonetic principles are, e.g. the specific selection and allocation of certain Phoenician signs to represent certain vowels in pre-Eucleidean times reflect in more than one way that the phoniconic impetus, or rather the realization of the phoniconic background of the east Mediterranean, was still in operation. It seems to be the case that, though the visual medium is based on the observation and analysis of the aural one - no matter how far accurate - and although it has gained its autonomy as a spatial language-bearing medium, it still provides a permanent record of an early postural approach to the primary medium.

Anyone who happens to consider alFarahidiy's contributions to the Arabic script will no doubt notice that they were not tilting at windmills. The general formula that suggests itself, a priori, is that he is at his best as a phonetician and a scriptologist. That his contributions are such as has been shown in the course of our introduction of the pre-Farahidiyan stage, and what solutions his innovation presented, as well as in the traditional exposition of his signs and what conventions lie in their background, and that they

represent a fully-fledged, phonetic approach, remains to be dealt with in our re-exposition of those signs and conventions.

#### 7.A.i AlFarahidiy's Signs, Taxonomized

Before breaking the ice around our view of what information alFarahidiy's signs transfer to the written text, a prefatory remark has to be made on the general characteristics of his signs.

From a general phonetic angle of vision, which takes not the Ugaritic script or the Greek script or the Devanagari script or the Roman script or the Arabic script, but the whole reflectively-representational, morphological and constructional properties and elements as well as the theoretical preconceptions behind the writing systems as part of its field since, after all, the aural medium and the visual medium are artefactual linguistic substances, we are in a position to categorize alFarahidiy's signs as phoniconic and analphabetically- iconic. However, this is not to be intermixed with the conventions, themselves, which we are in a position to classify as prosodico phonematic indices which, along with their system of positioning and the other analytico-synthetic constituents of his prosodic system, draw the attention of the reader to a hierarchy of multi-dimensional interdependencies within the word and sentence boundaries.

It follows from the above generalization that the major characteristics of alFarahidiy's signs are the following:

(i) Some of the signs are phoniconically designated:

In this category a miniature - supralinear or infralinear - version of a sign, which is morphologically identical but sizewise different, is used to represent the short quantity of the vowel. This, in fact, gives us grounds for terming such category as morphologically sizewise-phoniconic signs; while the positioning of such signs outside the linear layer occasions their terming as prosodically-phoniconic in terms of their short quantity-representation and their transitional quality.

(ii) Some of the signs are alphabetically-iconic:

In their abbreviated form they show indications of the phonological elements that have to be transferred to the text. For instance, /s / which abbreviates the word /siṭ / = conjuncture, initiates in the mind of the reader a number of operations which involve:

- (a) a change in the structure of the syllable which initiates the /ʔa/ prosodized written word, i.e. elision of /ʔa/ ;
- (b) a retrogressive syllable closure, i.e. closing the final Cv of the pre-/ʔa/-prosodized word with the C that remains of the collapsed syllable, and which if it happens to be in a sentence-initiatory-position becomes a syllabic.



- (iii) Some of the signs are phoniconic composites,  
i.e. analphabetico-phoniconic:

For instance, the undotted, overturned /n/ /<sup>ʾ</sup>/ , which caps a small size-wise-phoniconic sign (cf. i) in the representation of nunation stands for, besides its representation of a nasal, a pharyngealized retracted variant of the dental nasal in the system. Thus, it may be termed as simple phoniconic in its morphology, i.e. the representation of a hump-feature, and analphabetic in its symbolic description of the phonological phenomenon, identified by alFarahidiy as /ḵunnah/ (nasality, MS.389).

However, when such a sign caps another sign from the (i)-category, it becomes an analphabetico-phoniconic composite of / v / + / n / , a phenomenon referred to as the prosody of nunation, which is completely dispensable when the word is said in isolation, but contextually indispensable, primarily because it retrogressively influences the phonemic syllable-division, and progressively makes up a new syllable in which it constitutes - <sup>VC</sup> added to the pausal form of the word in isolation. In this way it does not only prohibit the pausal form by its non-pausal function, which prohibits prefixing the word with the definite article, but also conjunctures two clauses within the sentence boundaries.

e.g. /'hum rija:l/ = They are men  
 /sadaqu:'waḵdahum/ = They kept their promises  
 /hum rija:lun sadaqu:'waḵdaham/  
 = They are men who kept their promises.

- (iv) Some of the signs are positionally phonemico-prosodically descriptive:

They mark  $\pm$  a phonematic unit and syllable division simultaneously. For instance, the sign for  $/\omega/$ , which is by rule proportionally lower in positioning than every other supra-linear sign, receives a supra-supralinear or an infra-supralinear type-(i) sign, positioned over the phonematic unit it qualifies in a way quite comparable with the idea of bracketing in mathematics or symbolic logic with the major difference lying in the point that while mathematical bracketing works on the horizontally-representational plane, the positioning of signs in the diacritical system works on the vertically-representational descriptive axis to serve the embodiment of hierarchical interrelations.

If we have a word like - m-θ-a.-l, i.e. sculptor - the doubling is indicated by the positioning of  $/\omega/$  over  $/\theta/$ , the short vowel indicator  $/\acute{/$  is placed over  $/m/$ , and the zero-vowel indicator is placed over  $/l/$ ; hence, the word is diacritized thus:

$$/ma\theta\theta a.l/ = / \text{مُثَّان} /$$

However, if we have a word like - مثلث m-θ-l-θ  $/mu\theta alla\theta/$ , i.e. triangle - the transition from  $/m/$  to  $/\theta/$  is indicated by  $/\acute{/$ , the doubling and the transition from the second abutting consonant by a two-layered supralinear indicator  $/\omega/$ . This does not only stand

for the beginning, i.e. the release of the syllable, but also indicates by the absence of any other sign the closure, i.e. arrest, of the preceding syllable by C1 of the abutting sequence.

AlFarahidiy's impressionistic realization of the notion of the abutting consonants<sup>1</sup> may be very easily substantiated by inference from his prosodic theory as applied to verse structure where the examples we have given above are usually rendered in prosodial writing, thus:

/maθ-θa.l/      ——— / مَثْ نَال /  
 /muθa1-laθ/      ——— / مُثْنُ نَثْ /

It follows from the above observations that the most important characteristics of alFarahidiy's diacritical signs may be epitomized as follows:

- (i) Some of the signs are phoniconically-designated.
- (ii) Some of the signs are alphabetically-iconic.
- (iii) Some of the signs are alphabetico-phoniconically-designated.
- (iv) Some of the signs are positionally prosodico-phonematic.
- (v) All the signs are designated and positioned as analytico-synthetic markers of prosodic analysis.

<sup>1</sup> A very distinctive exemplifier can be drawn from the initial and medial and the final form of /θ/ ثْ, ث and /l/ لْ, ل.

7.A.ii AlFarahidiy's Conventions, Tabulated:

SIGNS AND CONVENTIONS

SIGN	TERM	MEANING	CONVENTIONS	DESIGNATORY BACKGROUND
1. ---	/--lwas†/	Conjuncture	SLINP, WINTR, iWj(ScLs)+G.	ANB.
2. ---	/suku.n/	Quiescence	PF,SA.	ANB.
3. $\omega$ f	/faddah/	Doubling by long stricture	aBC(C <sub>1</sub> SA+C <sub>11</sub> SR)	ANB
4. ---	/madd <sup>o</sup> /	Elongation	mV <sup>2</sup>	ANB
5. $\hat{\text{ـ}}$ $\hat{\text{ـ}}$ $\hat{\text{ـ}}$	/tanwi.n/	Nunation	adTR+ $\underline{n}$ IDM.	mpPLcSz+ANB
6. ---	/fathah/	The open	TR. $\frac{V}{3}$	mpPHcSz+ANB
7. $\text{ـ}$ ---	/kasrah/	The break	TR. $\frac{V}{3}$	mpPHcSz+ANB
8. $\text{ـ}$ ---	/ḍammah/	The embrace (lit.)	TR. $\frac{V}{3}$	mpPHcSz+ANB
9. $\text{ـ}$ ---	/hamzah/	Squeeze and release.	GsC	mpPHc

ABBREVIATIONS:

P = piece  
W = word  
iWj = interword juncture  
S = syllable  
C = phonematic unit  
V = medium V  
V<sup>2</sup> = long V (open S)  
aB = abutting  
A = arrest  
R = release  
cLs = collapse  
SL = syllabic  
IN = initiated

$\frac{V}{3}$  = very short vowel  
TR = transition  
IDM = indefinite marker  
ad = addition  
m = medium  
G = gemination  
ANB = alphabetic  
PHc = phonic  
Sz = size  
mp = simple  
Gs = glottal stop  
F = finality

TABLE 9.

## 8. HISTORICAL EXCURSUS

So far we have explained in terms of a general phonetic, historical and analytical approach, the genesis, signs and conventions which lie in the background of alFarahidiy's restoration of the principles underlying the earliest known of the east Mediterranean scripts, and the advances he made on them by the innovation of his prosodic system of diacritica. Yet it is of importance for the purpose of reasoned orthodoxy to generally identify the indirect, or perhaps direct, impetus which probably influenced and possibly initiated a phonetician of such an excellent calibre into his prosodic approach to the Arabic script.

At a glance, an historical map shows that the region where he improvised his method experienced a Hellinistic culture on a Babylonian soil in a universal society which extended to China - through India in the East, and to Spain - through North Africa in the west. Such a qualification of the region with all its historical and cultural connotations probably directs us towards the light of an unbiased understanding of the fact that the Arabic linguistic heritage, great as it is within its historical context, can never be viewed but as a synthesis of and a build-up on the linguistic studies that flourished in the whole area with which it came into contact, and as an occasioner of later stages<sup>1</sup> which came

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<sup>1</sup> This will be studied in a future work on "Phonetics and the Spanish Connection".

into contact with it, because logically speaking there is no intelligibility of any stage whatsoever without reference to a previous one, though each stage keeps intact its distinctive characteristics which gave it its place as a stage and its name as an identifier.

In principle, three major indicators - if we take the geographically-based and the culturally-based stimuli into account - would support the supposition that alFarahidiy's Legacy in script had its roots in Greco-Syro-Mesopotamian grounds. Those indicators may be identified by the following points of similarity:

- (i) The use of the supralinear and infralinear markers discloses affinity with the Babylonian cuneiformal and Egyptian hieratic syllable determinatives.
- (ii) The representation of nunation and the use of the size-wise-phoniconic principles as well as the maintenance of the unity of the word in script reveal affinity with the Ugaritic script and its offshoots.
- (iii) The prosodic approach in its representation of the linearly-missing, phonematic units stands out as a reminder of the Greek alphabetization.

The question of whether the Greek alphabetization was adopted as a model adapted to the prosodic requirements of the internal-external, flexional type of Arabic, or whether it came in the form of idea diffusion, remains, however, a very evasive question to determine with a degree of certainty for the meantime. Nevertheless, what is very certain is that Greek was the language

of administration in the early Umayyad period in Syria until the end of the VIIth Century; and what may be regarded as fairly certain is that alFarahidiy had a sort of access to the Greek script - a knowledge which really matters in this area of his legacy - if not the Greek language as has been propounded by alBustaniy (1883, vii,461-462).

As regards alFarahidiy's first experience with the Greek script, azZubaidiy (d.ca.989 A.D., 1954,34-47) and al<sup>Ḡ</sup>ushsh (1946,27-31) confirm that:

"Having been known as the pride of the Arabic linguists who boasted his linguistic genius over the Greek grammarians, alFarahidiy received a letter from one of the Greek kings who had instructed an Arab secretary of his to transliterate the Arabic content of a letter in the Greek script in order to test how far clever alFarahidiy was. Feeling that it was a sort of test, and catching the drift, in the course of conversation with the messenger, that the content was Arabic, in no time he puzzled out the letter and managed to transliterate the content in the Arabic script to the astonishment of the messenger and his king later."

No matter how legendary the framework of the anecdote might seem to us in our present days, the authoritative testimony of a linguist and a biographer like azZubaidiy and a researcher like al<sup>Ḡ</sup>ushsh, whichever way it is turned, implies and reflects the

solid conviction which at least dates back to the 10th Century that alFarahidiy experienced the influence of the Greek alphabetization, which eventually found its expression in his prosodic approach to the Arabic script.

## 9. CONCLUSION

As it has been so far possible to read in the historical, geographical and cultural stimuli, we seem to discern not only a purely linguistic contact, but further evidence for the unity and continuity of the body of human knowledge.

Anyone working on the contributions of a phonetician to a script whose grassroots eventually originate in another script which dates back to the second millenium B.C. is naturally drawn into some examination of historical nature. Our research into alFarahidiy's legacy in script required a reconstruction of the development of writing in Mesopotamia and Syria, as well as an analysis of the phoniconic elements which lie in the background of the Ugaritic script and the simplificatory processes which resulted in the superficial external, and the internal divergencies between the Ugaritic script, on the one hand, and the later east Mediterranean offshoots, on the other. It also required a brief revision of the pre-Farahidiyan reformation of the Arabic script, and an analytical view of the extrinsic and intrinsic deficiencies which it bequeathed



to alFarahidiy. In our research we gave the first priority to the analytical, phonetic side in the belief that, in the study of scripts with no written records about the theoretical preconceptions of their innovators, the real arbiter is an analytical study of the figurae and their connotations in their relations to the aural medium. Assuming the plausibility of the phoniconic background of the ancient east Mediterranean scripts, we had no hurdles to hold things up in proceeding to rediscover the phonetic background of alFarahidiy's system of diacritica and the information they transfer to the written text.

Broadly commenting on alFarahidiy's legacy in script and its historico-phonetic background, we are in a position to conclude on quite a few general and specific notes:

- (i) *The first attempt, as far as we are aware, to present a posturally-based inventory of figurae, is the Ugaritic script.*
- (ii) *The evolution of the post-Ugaritic, east Mediterranean scripts which, on the face of the figurae may seem alien to the prototype, came about after a process of simplificatory operations which involved the deletion of cuneiformality, reduction and ramification, re-allocation for phonological redundancy, amalgamatory re-allocation, stylization and calligraphic development.*

- (iii) *The prosody of pharyngealization has a clearcut representation, which reflects a sort of realization, in both the Ugaritic and the Arabic scripts, not to mention its representation in other east Mediterranean scripts which share the representation of the species with the above scripts.*
- (iv) *All the east Mediterranean scripts have phoniconic affinities with the Ugaritic script, which extrinsically has a superficial affinity with the earlier Babylonian scripts, but intrinsically represents a radical move to emancipate writing from the puriconic age.*
- (v) *The major contribution of the pre-Farahidiyan reformers may be said to have been the disambiguation of similar figurae, which replaced the original ones in the process of amalgamatory allocation.*
- (vi) *The embryo-diacritization stage, despite its contributions, was doomed to failure due to certain extrinsic and intrinsic deficiencies.*
- (vii) *AlFarahidiy contributed to the circular diacritization method by providing certain signs to indicate certain phonematic, allophonic and prosodic phenomena.*

- (viii) *AlFarahidy is the systematizer and designator of the current Arabic method of diacritization.*
  
- (ix) *AlFarahidiy's legacy in script is a synthesis and culmination of linguistic works that date back to times immemorial.*
  
- (x) *Although the Farahidiyan restoration has its grassroots in Arabico-Greco-Syro-Mesopotamian grounds, it is unique to alFarahidiy in its prosodic analysis and synthesis, the designation of specific signs on phoniconic, alphabetic and onomatopoeiac bases, the collapse of the word unity in favour of a larger unit, i.e. the foot, as has been proven in his approach to verse structure, despite the superficial maintenance of its entity for lexicographical and grammatical purposes, as well as the delimitation of the piece-boundaries.*
  
- (xi) *It represents a rigorous attempt to compromise the reflective representation of the articulatory postures in the visual medium by the provision of a number of multidimensionally-positioned signs which abbreviate a set of phonological rules that approximate the written text to the utterance.*

- (xii) It has transformed the Arabic writing system from a syllabic+ system into a system where not only the linearly missing phonematic units, but also a hierarchy of prosodic interdependencies, are represented in such a way that provides the transition of the Arabic script into an alphabetic system, proper, topped by the representation of a number of prosodic relations.
- (viii) It provided a solution for the anarchy which had resulted from the amalgamation of certain figurae in the post Ugaritic, east Mediterranean scripts - the Greek alphabet excluded - giving them a dual, phonological function. This solution came in the form of separating the representation of the medium open vowel from the glottal stop, and, by the use of diacritics, separating the double-articulated central approximants, i.e. /y/ and /w/ , from the medium front close spread vowel and the back close rounded vowel. Hence, the ± transitional indicator did the trick. That is to say, if the linear symbol bears a transitional diacritic, it stands for a double-articulated central approximant, whereas the absence of that diacritic demarcates the entity as a vowel.
- (xiv) Provided with a system which verifies its prosodicity by the unity of the word, the initial, medial, and final

*forms of the figurae, as well as the  
pharyngealization-indication, he carried the Arabic  
script to a very advanced stage of prosodic analysis.*

All being so, we have something definite to say and we have proven its propriety to be said that alFarahidy's legacy in script is not tilting at windmills; it is a genuine body of phonetic research, the proper discipline for the study of which is Phonetics.

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The following abbreviations of titles of periodicals and works are used. They are here alphabetically listed and glossed with their full title and place of publication.

AJA	American Journal of Archaeology (Baltimore and New York)
AJAS	American Journal of Arabic Studies (Leiden)
AJPh	American Journal of Philology (Baltimore)
AJPsychol	American Journal of Psychology (Austin)
AJSLL	American Journal of Semitic Languages and Literatures, from 1942 onwards Journal of Near Eastern Studies (Chicago)
Antiq.	Antiquity: A Quarterly Review of Archaeology (Cambridge)
Arab.	Arabica: Revue d'études arabe (Leiden)
Arch. Ling.	Archivum Linguisticum (Glasgow)
ASA	Annual Meeting of the Acoustical Society of America
ASAF	Asian Affairs (London)

BASOR	Bulletin of the American Schools of Orien. Research (New Haven)
BFA	Bulletin of the Faculty of Arts (Cairo)
BSLP	Bulletin de la Société Linguistique de Paris (Paris)
BSOAS	Bulletin of the School of Oriental and African Studies (London)
CIS	Corpus Inscriptum Semiticarum, Academia Inscriptum et Litterarum Humaniorum conditum et digestum (Paris)
CTL	Current Trends in Linguistics (The Hague)
EUDLWP	Work in Progress, Department of Linguistics, University of Edinburgh (Edinburgh)
Folia Ling.	Folia Linguistica (The Hague)
Glossa	Glossa (Burnaby, British Columbia)
Glotta	Zeitschrift für griechische und lateinische Sprache (Göttingen)
Heredity	An International Journal of Genetics (London)
IHDJ	In Honour of Daniel Jones (London)
IJAL	International Journal of American Linguistics (Bloomington)
IQ	The Islamic Quarterly (London)
IR	The Islamic Review (Woking, Surrey)
JA	Journal Asiatique (Paris)
JAOS	Journal of the American Oriental Society (New Haven)
JASA	Journal of the Acoustical Society of America (Menasha)
JEA	Journal of Egyptian Archaeology (London)
JEPsychol	Journal of Experimental Psychology (Princeton)
JIPA	Journal of the International Phonetic Association (re. mf)
JL	Journal of Linguistics (London)
JNPhysio	Journal of Neurophysiology (Washington)
JPhysio	Journal of Physiology (London)
JQR	Jewish Quarterly Review (Philadelphia)
JRAS	Journal of the Royal Asiatic Society of Great Britain and Ireland (London)
JSHR	Journal of Speech and Hearing Research (Danville, Washington)
JSS	Journal of Semitic Studies (Manchester)



Lachish	Welcome Marston Archaeological Research Expedition in the Near East (London)
Lg	Language (Baltimore)
Lg & Sp	Language and Speech (London)
Lings	Linguistics (The Hague)
Lingua	Lingua: Revue internationale de linguistique générale (Amsterdam)
Litera	Litera: Studies in Language and Literature, Department of English, University of Istanbul (Istanbul)
LS	Language Sciences: Research Center (Bloomington, Ind. University)
Lustrum	Lustrum: Internationale Forschungsberichte aus dem Bereich Klassischen Altertums (Göttingen)
MEJ	Middle East Journal (Washington)
mf	La Maître Phonétique (London)
Misc.Phon.	Miscellanea Phonetica (Bourg-la Reine & London)
MMID	Majalāt- lMajma <sup>C</sup> -l <sup>C</sup> ilmiyy-l <sup>C</sup> arabiy (Journal of the Arab Academy) (Damascus)
MW	Moslem (Muslim) World: A Quarterly Review of Language, Literature, History and Culture in the Midde East (Hartford, Conn.)
OLZ	Orientalistisch Literaturzeitung (Berlin)
Orbis	Orbis: Bulletin International de Documentation Linguistique (Louvain)
Oriens	Oriens: Journale de la Société Internationale des Études Orientales (Leiden)
Orientalia	Orientalia: Commentarii Periodici Pontificii Instituti Biblici (Rome)
PBA	Proceedings of the British Academy (London)
Phonetica	Phonetica (Basel)
PICL	Proceedings of the International Congress of Linguists
PICO	Proceedings of the International Congress of Orientalists
PICPS	Proceedings of the International Congress of Phonetic Sciences
PICSS	Proceedings of the International Conference on Semitic Studies
PL	Papers in Linguistics (London)
PMALA	Publications of the Modern Language Association of America (New York)

QISH	Quarterly Journal of Speech and Hearing (Bloomington)
REI	Revue des Études Islamiques (Paris)
REJ	Revue des Études Juives (Paris)
RLEQPR	Research Laboratory of Electronica Quarterly Progress Report (Cambridge, Mass.)
RPhysio	Respiratory Physiology
SILA	Studies in Linguistic Analysis, TPS (Oxford)
SPL	Studies in Phonetics and Linguistics (London)
Sumer	A Journal of Archaeology in Iraq (Baghdad)
Syria	Revue d'Art Oriental et d'Archeologie (Paris)
WPP	Working Papers in Phonetics, UCLA (Los Angeles)
WZKM	Wiener Zeitschrift für Kunde der Morgenlandes (Vienna)
ZDMG	Zeitschrift der Deutschen Morgenländischen Gesellschaft (Wiesbaden)
ZFA	Zeitschrift für Assyriologie (Leipzig & Berlin)
ZPhon	Zeitschrift für Phonetik und allgemeine Sprachwissenschaft (Berlin)

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## II

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### III

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Al<sup>C</sup>aru.d  
(extinct) re. Ibn-nNadi.m (d.1047 A.D.) (1:43)  
Ya:qu.t (d.1229 A.D.) (4:182)  
Ibn-Xallika.n (d.1282 A.D.) (see Intro.)  
Hajji Xalifah (d.1657 A.D.) (2:1438)

Al<sup>C</sup>awa:mi1 (The Determiners) re. Ibn-Xallika.n  
(extinct)

Al<sup>f</sup>i:qa.1 (Rhythm) re. Ibn-nNadi.m (1:43)  
(extinct) Ya:qu.t (4:182)  
AlQiftiy (d.1248 A.D.) (1:343)  
Ibn-Xallika.n (see Intro.)

Jumlaht -?a:la:t-l?i<sup>C</sup>ra.b (Articles of Prosodification)  
(extinct) re. Ya:qu.t (4:182)

AnNaqt-washShakl (Dotation and Shaklification)  
(extinct) re. IbnNadi.m (1:43)  
AdDani. (1960:9)  
Ya:qu.t (4:182)  
AlQiftiy (1:346)  
Ibn-Xallika.n (see Intro.)  
Hajji Xali:fah (2:1467)

AnNagham (Modes and Melody)  
(extinct) re. Ibn-nNadi.m (1:43)  
Ya:qu.t (4:182)  
Ibn-Xallika.n  
Hajji Xali:fah (2:1467)

AshShawa:hid (Corpus-based supporting evidence)  
(extinct) re. Ibn-nNadi.m (1:43)  
Ya:qu.t (4:182)  
Ibn-Xallika.n (see Intro.)

## Appendix A



A.

PRE-DU?ALIYAN SCRIPT

Su:raḥ -nNu.r, XXIV in a Qurʾān copied on vellum in the Arabic calligraphic style, alMaʿīl, probably in Mecca or Medinah in the 8th century. It is believed to be one of the two oldest extant Qurʾān manuscripts. It is written in vertical format and it is devoid of any diacritical marks with the exception of occasional strokes to indicate letter-pointing.

Ref. British Library, London, Or.2165, ff. 67v-68r.



Handwritten text in a stylized script, likely a form of Arabic or Persian calligraphy, arranged in several lines. The text is written in dark ink on aged paper.

Handwritten text in a stylized script, likely a form of Arabic or Persian calligraphy, arranged in several lines. The text is written in dark ink on aged paper.



B.i.

THE CIRCULAR DIACRITIZATION METHOD

Su:raḥ -tTakrīm, LXVI from a Qurʾān copied on vellum in black Kufic script, probably in the early 10th century in North Africa. Diacritical dots in red, blue and orange are used to indicate the vowels, the hamzah and the shaddah respectively, with two red dots placed above or below the letter to indicate nu:naḥ according to adDuʿalīy's system.

Tunis, National Library

قَالَ لَهُمْ رَبُّكَ إِنَّكُمْ كَافِرُونَ  
وَقَالَ لَهُمْ نَبِيُّهُمْ إِنَّ آيَةَ  
رَبِّكُمْ أَنْ يَخْلُقَ مِنْ حَلِيقَتِكُمْ  
مِثْلَ بَنَاتِكُمْ فَأَخْلَقَ مِنْ  
حَلِيقَتِهِمْ ثِيَابًا مِثْلَ بَنَاتِهِمْ  
فَكَفَرُوا لَهُمْ لَكِبُوا

B.ii.

Su:raht -nNajm, LIII from a Qurʾān copied on vellum in black Kufic, in all probability in the 9th century in Qairawān. Red and green diacritical dots are used to indicate vowels, two red dots positioned together mark nu:nation, while smaller black dots are used for letter pointing, according to the system of Abu-lʿswād-ḏDuʿaliy.

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C.

#### THE PROSODIC DIACRITIZATION METHOD

Su:raḥ -lBaqarah, II, 225, copied and illuminated by  
Caliyy-bn-ʿahmad- lWarra.q at Qairawa.n in 1020. The  
script lacks letter pointing, but it has full ortho-  
graphic signs according to the system developed by  
alFarahidiy. The vowels are marked in red, the  
suku.n and shaddah in blue and hamzah and maddah in  
light green. It is written in the western Kufic  
style.

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